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**TOWARDS A FRAMEWORK OF
KNOWLEDGE MANAGEMENT IN
THE CHINESE PUBLIC SECTOR:
A CASE STUDY OF CHINA
CUSTOMS**

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Ph.D

2008

**TOWARDS A FRAMEWORK OF KNOWLEDGE
MANAGEMENT IN THE CHINESE PUBLIC SECTOR:
A CASE STUDY OF CHINA CUSTOMS**

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A thesis submitted in partial fulfillment
of the requirements of the
University of Northumbria at Newcastle
for the degree of
Doctor of Philosophy

Research undertaken in the School of Business

May 2008

Abstract

There is intensive research in knowledge management study for the private sector in Western countries. However, less research has been done for the public sector, and none has been done in the Chinese public sector. The motivation is that knowledge management issues in the public sector are much neglected in the Chinese public sector. Moreover, compared with knowledge management in the private sector, knowledge management in the public sector has received much less attention. This thesis investigates issues and difficulties and important factors in the process and the implementation of knowledge management for Chinese public organizations and to help them have a better understanding of the process of the knowledge management by developing a framework that is applicable to the Chinese public sector.

To address issues and difficulties in the Chinese public sector, this study explored *how knowledge management can be applied to the Chinese public organization context*. This involves complicated social processes such as social relationships both in and outside the organization. This research takes a social constructionist paradigm, trying to understand and interpret the Chinese public managers' unique experiences, perceived values and embedded Chinese culture that can have great impact on the application of knowledge management to the Chinese public organization. In line with this philosophical stance, Forty three Customs officers in China Customs, mainly at middle or lower level of management, were involved in qualitative interview, with data analyzed through content analysis.

The research findings indicate that China Customs has been engaging knowledge management activities all the time although there is no explicit mentioning of the term 'knowledge management' and staff has insufficient perception and awareness of the concept of knowledge management. Its management style is strongly influenced by Chinese political system and the Chinese traditions. Therefore, to effectively manage knowledge, it is necessary to change the mindset of leaders and gain their support financially and morally in fostering a learning and knowledge sharing culture, developing a knowledge management strategy, training and rewarding people, and building an infrastructure for information technology. The study is an in-depth analysis of one large government organization's practice of knowledge management, which has not been studied before. Contributively, this study offers understanding of applying knowledge management to the Chinese public context. By drawing upon experience of Chinese public managers, it extends knowledge management theories and offers a contribution to practice grounded in the Chinese context. Significantly, this thesis develops a framework , consisting five activities of knowledge process and six identified important factors through literature review and interviews, by integrating factors into the whole knowledge management process, providing practical guidance for the Chinese public managers to

inform how knowledge will be managed in the Chinese public sector.

Declaration

I acknowledge that the work presented in this thesis has not been submitted for any other award, except that entailed by research training purposes during my PhD studies at Newcastle Business School of Northumbria University at Newcastle. I have completed the required research training and milestones required for the degree. The work is the result of my individual work.

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Acknowledgements

Firstly, I owe thanks to the Director of Studies - Dr Richard Li-Hua, and other internal supervisors - Professor Teresa Warning, Professor George Stonehouse and Dr Janice MacMillan, who are working or worked at Northumbria University. Their support, advice, guidance and supervision have been invaluable in the completion of this research.

I would also like to thank Ms Xu Yang and Ms Qiumeng Mao who kindly arranged some interviews for me, and all those people who co-operated in the interviews for this thesis. Without their contributions, the empirical work could not have been conducted.

Finally, I wish to acknowledge the continual and unquestioning support of my wife Xiaowen, sister Xiaohong, brother Xiaofeng, my mum and other family members in China.

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Chapter 1 Introduction

1.1 Overview

The subject of this thesis is to consider issues and difficulties and important factors in knowledge management processes and the implementation of knowledge management initiatives in the public sector, so that they can be used to improve public sector organizations' understanding of the processes and the implementation of knowledge management. Why is this so important to be studied? This overview aims to answer the question by discussing three related aspects. Firstly, the history and current research of the knowledge management (KM) discipline, as well as public organizations' features, will be reviewed to highlight the necessity of an empirical investigation on public organizations' perceptions of the importance of, and their needs for, knowledge management, and issues and difficulties in the public sector. Secondly, if public organizations' perceptions on the importance of, and their needs for, knowledge management and issues and difficulties, and important factors in the public sector are identified by the investigation, then public organizations will involve in the knowledge management processes to acquire their needed knowledge, to store the acquired knowledge in the knowledge base, to share and apply and use the knowledge, and to create knowledge in order to enhance their efficiency and effectiveness. A framework so developed can help public organizations have a better understanding of knowledge management processes and issues and difficulties in the implementation of knowledge management so that their performance could be greatly improved. Thirdly and finally, what important factors should be presented within it if such a framework is developed?

1.1.1 The Necessity of an Empirical Investigation on Knowledge Management in the Public Sector

The Rise and Definition of Knowledge Management

In the mid-1980s, the focus of international competition was moving increasingly on product and service quality, responsiveness, diversity and customization (Wiig, 1997). Organizations were beginning to recognize that technology-based competitive advantages were transient and that the only sustainable competitive advantages they had were their employees (Black and Synan, 1997). To remain at the forefront and maintain a competitive edge, organizations must have a good capacity to retain, develop, organize, and utilize their employee competencies (Martensson, 2000; Lundvall and Nielsen, 2007). Some large organizations, such as US-based Chaparral Steel, had been pursuing a knowledge focus for some years since 1975, but during this period, it started to become a more wide-spread business concern (Wiig, 1997; Carrillo, 2004).

Meanwhile, the academic community also began to pay more attention to the increasingly important role of knowledge in the emerging competitive environment. In 1986, the concept of ‘Management of Knowledge: Perspectives of a New Opportunity’ was introduced in a keynote address at a European management conference (Wiig, 1997). Scholars and observers from disciplines as disparate as sociology, economics, and management science agree that a transformation has occurred – ‘knowledge’ is at centre stage (Davenport, De Long, and Beers, 1998). Drucker (1993, p.42) argues that “knowledge is the only meaningful resource today. The traditional factors of production... have become secondary. They can be obtained... easily, provided there is knowledge”. In other words, none of these factors of production can be utilized in any sensible way without the application of knowledge. Thus, it is knowledge that is key to success. To be competitive and successful, experience shows that enterprises must create and sustain a balanced intellectual capital portfolio. They need to set broad priorities and integrate the goals of managing intellectual capital with the corresponding effective knowledge processes. This requires deliberate and systematic knowledge management (Wiig, 1997).

Although “...there’s no universal definition of knowledge management, just as there’s no agreement as to what constitutes knowledge in the first place” (Santosus and Surmacz,

2005, p.1; Ives *et al.*, 1997), this thesis would like to present the definition of knowledge management as follows:

“An ability of an organization to use its collective knowledge through processes of knowledge creation, storing, sharing, and application to achieve its objectives”.

This definition shows that processes play a crucial role in knowledge management. Many knowledge management lifecycle models (Alavi and Leidner, 2001; Nissen *et al.*, 2000; Beijerse, 2000; Despres and Chauvel, 1999; Nissen, 1999; Davenport and Prusak, 1998; Gartner Group, 1998; and Liebowitz and Beckman, 1998), composed of various processes, have been proposed. However, this research does not intend to discuss all processes in the literature, but to choose five of the most common ones for discussion, which are knowledge acquisition, storage, sharing, application and use, and creation.

Knowledge acquisition-Organizational knowledge in the public organizations has two major sources: internal and external. Knowledge spreads in parts and bits either in people's heads or in documents in the organization and needs to be identified. Knowledge has to be acquired from the external sources when it does not exist in the organization. Knowledge map (Davenport and Prusak, 1998) and knowledge audit (Liebowitz and Beckman 1998) are the tools that can be used in the identification and capture of knowledge.

Knowledge storage-Knowledge resides in peoples' head and spread in the organizations. However, people and organizations can forget, and remembering is a crucial element of KM, therefore knowledge needs to be put in an organizational memory (Walsh and Ungson, 1991). To build such a system in the organization, organization has to use different approaches to explicit and tacit knowledge. To release tacit knowledge from peoples' mind, it is advisable to use people-to-people approach (Davenport and Prusak, 1998) and use people-to-IT approach (Zack, 1999b and Hansen *et al.*, 1999) to store explicit knowledge.

Knowledge sharing-The purpose of storing knowledge in the organization is to share it. Knowledge abounds in organizations, but its existence does not guarantee its use (Davenport and Prusak, 1998). There are many barriers to knowledge sharing in the organizations, Szulanski (1996), Cohen and Levinthal, (1990), and O'Dell and Grayson (1998) have identified some of them. Therefore, to share knowledge effectively in the organizations, such barriers to knowledge sharing have to be removed and a sharing-culture established.

Knowledge application and use-Knowledge application refers to taking the stored and shared knowledge and internalising it within one's perspective and worldviews and put into use. Traditional hierarchical government organizations can no longer meet the challenges of knowledge age of 21century. Therefore, government needs to transform itself to get closer to serve the general public better. KM can provide the solution and help government to accomplish this goal by applying their knowledge to increase knowledge flow.

Knowledge creation-Once knowledge is identified and acquired, stored, shared, applied and internalized, the output should be the creation of knowledge. Knowledge creation is a process in which organizations can create new knowledge that can be absorbed by the employees and further applied to production activities or services, and it is a cyclical process in which new knowledge is created by physical operations or interactions of continuous justification and modification among people. Nonaka and Takeuchi (1995) describe four knowledge creation processes: socialization, externalization, combination, and internalization (SECI mode). Each process involves converting one form of knowledge (tacit or explicit) to another form of knowledge (tacit or explicit). Public managers and staff must understand the processes to enhance their performance and achieve a better result.

The Public Sector and Knowledge Management

It is increasingly recognized that an organization's most valuable resource is the

knowledge of its people. Knowledge management recognizes that today nearly all jobs involve 'knowledge work' and so all staff are 'knowledge workers' (Drucker 1993) to some degree or another. Hence, creating, sharing and using knowledge are among the most important activities of nearly every person in every organization. To enhance the performance in the public sector, knowledge management has to be introduced to face the challenge of the accelerated rate of change in today's organizations and in society as a whole.

Government organizations have been managing knowledge all the time in the work – inseparable from strategy, planning, consultation and implementation (OECD 2001), but not in an organized or systematic way. Evidence drawn from the existing literature suggests that public sector is falling behind in these practices. Governments are now beginning to realize the importance of knowledge management to its policy-making and service delivery to the public and some of the government departments are beginning to put knowledge management high on its agenda. However, it is not easy to implement, as it seems (Cong and Pandya, 2003). There are many factors that may influence how knowledge is managed in the organizations, especially the sector-sensitive ones. Knowledge management indeed has some potential to actually strengthen government effectiveness and competitiveness in today's changing environment. Therefore, to meet the challenges and keep up with fast pace of change, government organizations have to seriously deal with knowledge management practices in the private sector and adopt and adapt them to the public setting.

Governments' effectiveness in leveraging knowledge will play a key role in the success of a national economy. Effort devoted to study or exploration of knowledge management issues related to the public sector is considered to be worthwhile. However, according to the foregoing introduction, it is known that knowledge management, as an emerging discipline (Ives *et al*, 1997), is mainly derived from large businesses (Sparrow, 2001; Carrillo, 2004.; Matlay, 2000; Deakins, 1999). As a result, only a small proportion of the literature (McAdam, and O'Dell, 2000; Wiig, 2002; Syed-Ikhsan and Rowland, 2003;

Cong and Pandya, 2003; Liebowitz and Chen, 2003; Cong *et al*, 2004; Taylor and Wright, 2004; McNabb, 2006; Cong *et al*, 2007), has attempted to address knowledge management issues and difficulties in the public sector in a fragmented way, which is not in line with the importance of the public sector.

The Feature of the Public Sector and Necessity for an Empirical Investigation

It is widely recognized that there are differences between the public and private sector. The public sector has some unique features of its own, such as not for bottom figures. These features have to be taken into consideration when management practices are adopted from the private sector. Generally speaking, some activities and structures of management can be applied to organizations in both sectors (Durcker, 1954, 1974; Herzberg *et al*, 1959; McGregor, 1960; Rice, 1963; Lawrence and Lorsch, 1969; Mintzberg, 1973). However, to introduce management practices from the private sector without considering public sector features and contexts is not a good choice.

Discussions about similarities and differences between public and private sectors abound in the literature among academics and practitioners (Murry, 1975; Rainey *et al*, 1976; Heffron, 1989; Hughes, 1994; Lawton, and Rose, 1994). Heffron (1989) summarizes most important differences between the two sectors identified by Rainey as follows:

- Environment factors: Public organizations are subject to less market exposure than their private counterparts and have less incentive for efficiency. Revenue for public organizations depends on appropriations from political branches, not on market performance. At the same time, public organizations are subject to more formal legal constraints and to political influences from diverse sources and groups.
- Organizations – Environmental transactions: Environmental transactions of public organizations have been identified as more coercive, broader in impact, and more subject to public scrutiny and to expectations that they are responsive, accountable, and fair.
- Internal structures and processes: Public organizations have vague, multiple goals

that are difficult to measure and are frequently conflicting. Equity is as important as efficiency, and authority is likely to be fragmented and weak. Public organizational performance is likely to be characterized by caution and less innovativeness.

- **Personnel:** Public employees may have higher dominance and flexibility needs and lower work satisfaction and organizational commitment. Top executives have shorter tenure and more limited time perspectives. The nature of goal makes measuring employees more difficult.

This list of differences can be expanded further and at a minimum it indicates that great caution should be exercised in applying business organization theory to the public sector. However, determining whether the identified differences are actually characteristic of ‘typical’ public or ‘typical’ private organizations is complex, especially in the field of knowledge management.

Issues to Be Addressed for Empirical Investigation

The concept of knowledge management is nothing new (Hansen *et al.* 1999; Lundvall and Nielsen, 2007). Organizations have always used knowledge management practices (in various disguises) to make decisions, and to produce goods and services, though not in a deliberate and systematic manner. Essentially, what is new about knowledge management is the act of being conscious about the existence of a knowledge management process (Sarvary 1999). Government has been engaging in knowledge management activities in the policy-making and services provision all the time but not in a systematic manner. The review of literature shows that there is relatively little empirical research in the public sector compared to the private sector and there also appears to be relatively very little empirical work in the Chinese public sector. Hence, little is known about how knowledge management is practiced and what the difficulties are in the public organizations in China to provide empirical evidence to clarify how knowledge management in the public sector is practiced differently from the private sector. Therefore, there is a big gap that exists in the empirical identification of public organizations’

perceptions on the importance of, and specific needs for, knowledge management and issues and difficulties in the implementation of knowledge management in China. Therefore, it would be of value if an empirical investigation with a Chinese public organization could be carried out and a framework developed to address these issues and provide empirical evidences in this field.

1.1.2 The Need and Importance of Knowledge Management for the Public Sector

Since no single organization has the full range of knowledge and expertise needed for timely and cost-effective product and service innovation (Abou-Zeid, 2002), it is hard to believe that an organization could survive without any knowledge exchange with the outside world, and within the organization in such an open and modern society. Therefore, public organizations certainly have needs for knowledge management, but the point is that it is hard to know how knowledge management is practiced, how knowledge is managed, and what the issues and difficulties are in the public organizations. This is what the empirical investigation targets.

The management of knowledge is of increasing importance for governments in dealing with the challenges created by the knowledge economy. These challenges are addressed in the following aspects (OECD 2003):

- Knowledge has become a critical determinant of competitiveness for the public sector. Service delivery and policy making are the main tasks for government. In a knowledge economy, governments are increasingly facing competition in these areas at both international level and national level. In the public sector, goods and capital are not as important as in the private sector, but knowledge is. Knowledge is an important element of competition and is a central resource of the government. Effective functioning of government rests on effective acquisition and dissemination of knowledge.
- Private firms produce goods and services that are increasingly intensive in

intangible capital, directly competing with the public sector for the delivery of goods and services such as education, science, security and knowledge.

- Retirement of civil servants and frequent transfer of knowledge workers across government departments also create new challenges for the retention of knowledge and preservation of institutional memory and the training of new staff. There is also competition for talent with an ability to share knowledge. Therefore, capturing tacit knowledge and then training the staff is important so that it can be passed on to new staff.
- Increasingly knowledgeable citizens require governments to be on top of newly created knowledge, as it is increasingly rapidly produced by more differentiated actors.

Benefits of Knowledge Management

There are many benefits to be reaped from knowledge management. Bailey and Clarke (2001) and Cong and Pandey (2003) believe that benefits can occur at both individual and organizational levels in an organizational setting: On one hand, knowledge management provides staff opportunities to boost skills and experience through knowledge sharing and learning together, thus improving job performance and leading to better career development. On the other hand, knowledge management can enhance organization's overall performance through increased efficiency and effectiveness, productivity, quality, and innovation. For public sector, managing knowledge could reduce the cost of operations and improves customer service and increase the financial value of the organization (Beveren, 2003; Sotirakou and Zeppou, 2004). However, to reap the benefits from knowledge management, government will take a positive attitude toward knowledge management and develop proper strategies and plans to implement them in order to succeed

1.1.3 The Important Factors

In a survey that has been done in Knowledge Management Magazine (2001) claimed that

that an organization's main implementation challenge come from the absence of a 'sharing' culture and employees' lack of understanding knowledge management and the benefits it offers. This is in line with the study conducted by Cong *et al.*, (2007). To address these challenges, Organizations have to make training, change management, and process redesign major concerns of knowledge management initiatives in the Chinese public sector.

Having given a general overview of the research domain, in the following sections, the research objectives will be defined, and the structure of the thesis described.

1.2 Aim and Objectives of the Research

Based on the previous overview, it is known that knowledge management issues in the public sector are very neglected and has received much less attention, which is not in line with the importance of the public sector; This research attempts to address the issues in the public sector and to help them have a better understanding of the processes and issues in the implementation of the knowledge management. The empirical identification of public organizations' perceptions on the importance and issues of, and their needs for, knowledge management and issues and difficulties in the implementation of knowledge management may provide practical evidences to underpin the necessity of the development of the framework. The identification of the important factors highlighted in the framework will further strengthen its role in improving public organizations' understanding of knowledge management.

The aim of the research is to investigate issues and difficulties in the process and implementation of knowledge management in the Chinese public sector due to its political system and unique culture, with a view to developing a framework for the public sector. Specifically, the objectives of the research are to:

- review the literature on public administration, organizational and management theories, organizational learning, and knowledge management, present relevant

models, and factors, thus lay a basis for the identification of relevant research issues and the development of the framework;

- investigate the current knowledge management practices in the public sector, and identify their perception on the importance of, and needs for, knowledge management;
- establish a theoretical framework, which enables the public managers to address the issues and difficulties, appropriateness and effectiveness in the processes and implementation of knowledge management in the Chinese public sector.

1.3 Structure of the Thesis

This study is divided into seven chapters, which are diagrammatically presented in Figure 1.1. This chapter provides an introduction to the thesis. The main issues are sketched. The research aim and five objectives are then defined. Finally, the structure of the thesis is outlined.

Chapter 2 firstly reviews literature on Western and Eastern traditions of thinking about knowledge and presents two different approaches to knowledge. Then the different types of knowledge, evolution, schools, and application of knowledge management in modern management are clarified. Further, the literature on the meanings and content of knowledge management is reviewed. Next, the key processes of knowledge acquisition, knowledge conversion and creation, transfer, and accumulation, and issues of knowledge management, and favorable conditions for knowledge management from the three perspectives of information technology (IT), strategic management, and organizational culture are presented. Thus, the academic connections among these areas are also established. All information presented so far will lay a good foundation for the research in the following chapters.

Chapter 3 reviews literature on the differences between the private and public sector and presents the concept of New Public Management (NPM), which has paved the way for

knowledge management to be implemented in the public sector. However, specific issues related to NPM are not addressed in details here. Then connection between NPM and the public sector reforms in China is made for knowledge management to be implemented in China. Further, the literature on knowledge management in the public sector is reviewed and a theoretical framework is developed for the public managers to address the issues, appropriateness and effectiveness in the process and the implementation of knowledge management in the Chinese public sector.

Chapter 4 begins with the comparisons of the advantages and disadvantages between positivist versus interpretivist, and between quantitative versus qualitative approaches, then selects the research method and techniques (i.e., face-to-face interview) adopted by this study. Firstly, the empirical work of this research mainly focuses on gathering data about relevant respondents' or interviewees' subjective perceptions, beliefs and views on the key research issues and difficulties and identified important factors related to the processes and the implementation of knowledge management in the public sector,. It is the interpretivist approach that is adopted in this study because its epistemology is based on the assumption that reality is constructed by the observer making sense out of the external events and data with which he/she is presented. Secondly, through the comparative analysis on the advantages and disadvantages of the four research methods (explicatory method, case study, survey and experimental method), the case study method has been selected as a suitable means for the empirical investigation on issues of knowledge management in the public sector. Thirdly, in order to gather empirical information about public organizations' perceptions on the importance and issues and important factors of knowledge management, a face-to-face interview has been chosen as an appropriate technique for this purpose to validate and triangulate the key findings of the pilot study, and verify the identified important factors. The interviews are composed of the pilot and formal interviews, and conducted in China Customs and all the interviews are analyzed together. Finally, discussed are data transcription and data analysis strategy.

Chapter 5 will present the key findings of the pilot study in the public sector, surface the

support evidences collected from the face-to-face interviews, and triangulate the key findings and support evidences so as to provide more reliable conclusions and richer picture about how knowledge management is practiced and what issues and difficulties encountered in the process and the implementation of knowledge management in the public sector. This chapter begins with the discussion of the pilot study result; then, background information about the organization, China Customs has been chosen for case study; and finally selection of case and respondents and procedure and instrument are introduced.

Chapter 6 is the heart of this thesis and sets out the main findings from all the interviews for the issues and difficulties in the processes and the implementation of knowledge management in the Chinese public sector. The discussion is based on the theory, practice that works in the West and specific practice that operates in China in accordance with the framework proposed in Chapter 3.

This Chapter first provides the response on perception and understanding by the informants of knowledge management in a public organization, China Customs. The data gathered from the these interviews provide some first-hand information as a general understanding of the current situation of knowledge management in China Customs, which may more or less represent the real situation and progress of knowledge management in the Chinese public sector. Then, discussion is made on the framework developed as shown in Figure 3.3, starting from the most common activities of KM process (knowledge identification and acquisition, accumulation, sharing, application and use, and creation), followed by six important factors (organizational culture, structure, strategy, education and learning, incentive or reward system, and IT). Finally, conclusions are drawn in the end.

Finally, in chapter 7, the conclusions and contributions of this research are presented. The limitations are discussed. Future research is also recommended.

1.4 Chapter Summary

This chapter has laid the foundation for this thesis to communicate how this research has been designed, developed and conducted. From introducing the research background into how this research question has been identified, it has provided an overview of the contents of each chapter that gives a chance for the researcher to review this research as a whole process and gain better understanding of the study. On basis of these foundations, a detailed description of the literature review is to be presented in the next Chapter.

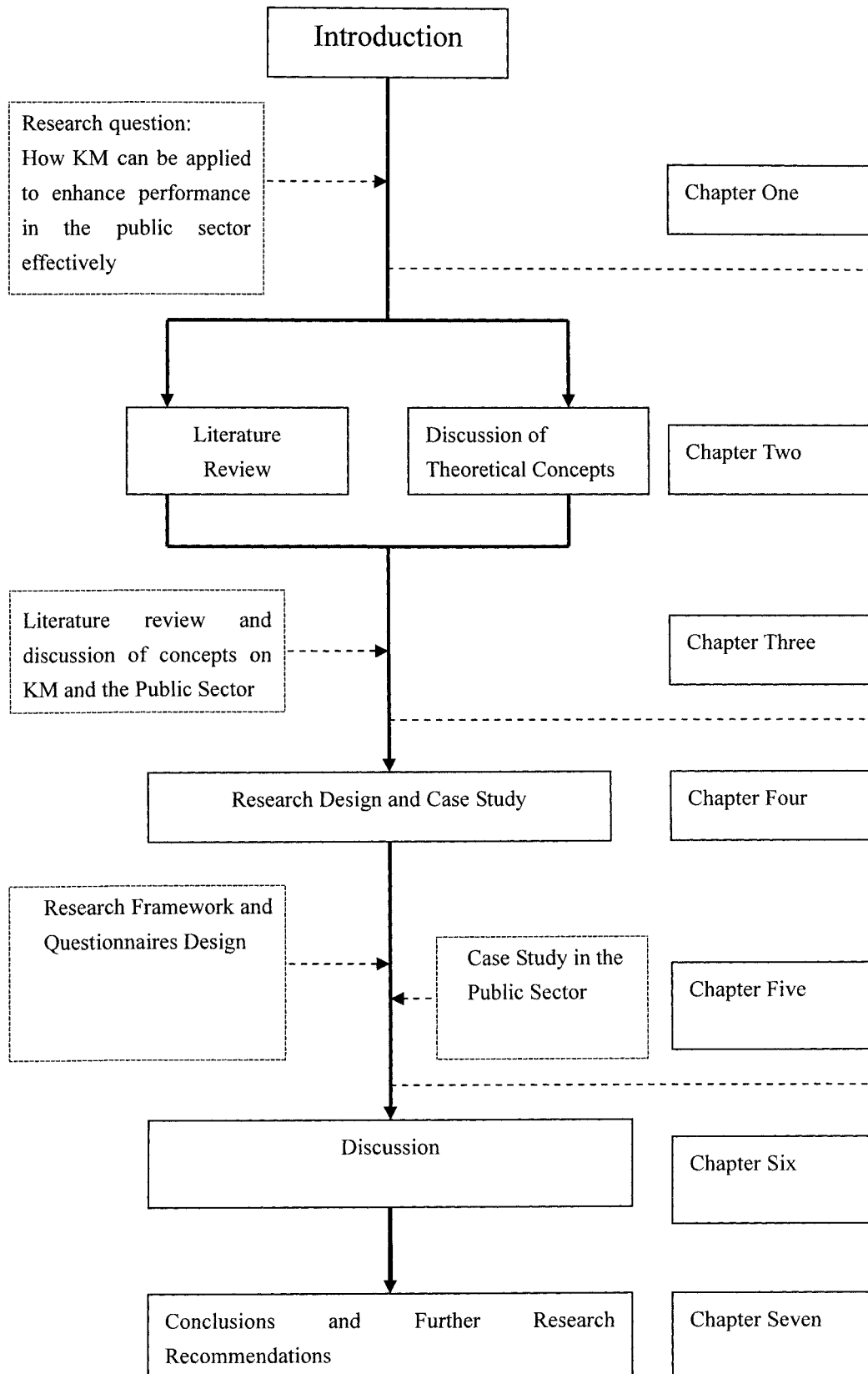


Figure 1.1 Structure of the Thesis

Chapter 2 Background Literature

2.1 Introduction

The purpose of this chapter is to understand the basic theoretical concepts of knowledge management. Firstly, philosophical and managerial views and discussions on the meaning of knowledge then the meanings and contents of knowledge management are introduced, next, the evolution of knowledge management, paradigm shift, and current situations are discussed, and finally discussed are the mechanism of knowledge management which consists of two main parts: Processes and enablers of knowledge management. The conjugation of these two parts is the best match of the operational model of knowledge management.

2.2 Literature Review on Knowledge Management

2.2.1 The Definition of Knowledge

The scope of the meaning of knowledge is broad. Knowledge exists in all human activities, ranging from academic to practical. However, there is no consensus on the definition of knowledge.

Human beings can create, produce, disseminate, sell, and consume knowledge through thinking and symbols, which distinguishes human beings from animals. In other words, human beings have a characteristic of pursuing knowledge, which originates from curiosity, foresight, insight and crave for creation and invention and they are usually seen first from an idea, insight or instant intuition. Ever since the ancient Greek period, pursuing the answer to the question in the whole history of Western philosophy started and it has been going on until today. Of course, it has been the same case in the East and such evidences of pursuit of knowledge can be found in many classic works in China

such as Confucian analects, etc. Therefore, the pursuit of knowledge both in the East and West is briefly discussed.

China is a country with a long history. In Oriental epistemology, viewed from the present, wisdom of many ancient sages is extensive and profound and breathtaking, among which include, for example, Xunzi, who said in his book *Zhengming* that the abilities of human beings to know is called *Zhi* (know) and the abilities to know accords with external objects is called *Zhi* (Wisdoms), which is knowledge.

We can know from *Lunyu* (Confucian Analects), the world earliest encyclopedia that *Zhi* (knowledge) appears 116 times in Confucian Analects. *Zhi* (knowing) contains three meanings. First, it means knowledge as a noun; second, it means know as a verb, and third, it means wisdom as a pronoun. The original meaning of *Shi* (knowledge) is to fight each other by using weapons, making an impact sound of weapons and extended to mean knowing by hearing and speaking. Therefore, *knowledge* has ten meanings. First, shooting and degustation in person; second, fighting in person, speaking from one's own lips and hearing with one's own ears; third, cognition, the process of cognition; fourth, methods, tools and skills; fifth, having standards; sixth, high level of education or identity; seventh, morality; eighth, experiences; ninth, right and wrong; tenth, specific knowledge. Viewed from the image of Chinese characters, it is known that *Zhi* (knowing) is consisted of arrow and mouth; *Zhi* (wisdom) is consisted of arrow, mouth, and speech. Arrow denotes direction and the meaning of infusion; Mouth and speech denotes the meaning of language. Therefore, the original meaning of *Zhi* (knowing) refers to everything that heart feels has direction and infusion and thereby constantly link to behaviors and wills and emotions. Whereas *Shi* (knowledge) originally means remembering by heart, later extended to mean identification or recognition and then further extended to mean judgment or discernment, which means foresight and foreknowledge.

There are different approaches to knowledge in the Oriental traditions of thinking in philosophy. Chinese approach to knowledge is that knowledge for the Confucian meant

knowing what to say and how to say it as the route to advancement and earthly success and for the Chinese Confucians book learning is almost the only way to acquire knowledge. Knowledge for Taoist and the Zen monk meant self-knowledge, and the road to enlightenment and wisdom (Drucker, 1993).

Japanese approach to knowledge integrates the teachings of Buddhism, Confucianism, and major Western philosophical thoughts, which is different from traditional thinking of dualism in the Western philosophy. The Japanese approach is characterized as oneness of humanity and nature, oneness of body and mind, and oneness of self and other (Nonaka and Takauchi, 1995), which emphasize collective, organic, subjective knowledge and intuitive wisdom, and self-actualization in human interaction between self and other.

Generally, there have been two traditions of thinking about knowledge in Western philosophy. One is rationalism and the other is empiricism. While the former views knowledge as something to be obtained deductively via some ideal mental process, the latter views knowledge as something to be obtained inductively via particular sensory experience. These two approaches to epistemology are derived from a tradition separating the subject who knows from the object that is known. The separation is known as “Cartesian split” between subject (the knower) and object (the known), mind and body, or mind and matter.

From the above brief introduction to views of knowledge in both Oriental and Western philosophies, it is concluded that traditional Western epistemology lay great emphasis on the absolute, static and non-human nature of knowledge, typically expressed in propositions and formal logic (Nonaka and Takauchi, 1995). In contrast, Oriental epistemology put their focus on the context-specific, active and subjective nature of knowledge as a justified belief. Therefore, knowledge is dynamic, humanistic and relational and it is considered as a dynamic human process of justifying personal belief toward the truth (Nonaka *et al*, 2000).

There have been numerous definitions of knowledge in the literature, but none seems to be universally appropriate, as the definition depends on the context in which they are used (Sveiby, 1997; Bender and Fish, 2000). For the purpose of this study, knowledge is defined as follows:

Knowledge is information combined with experience, context, interpretation, reflection, and perspective (Davenport et al, 1998; Frappaolo, 1997; Singh, 2007) that is ready to be applied to decisions and actions (Davenport et al., 1998).

The Differences between Data, Information and Knowledge

Compared with the views of philosophy, that of management on meanings of knowledge tends to lean more on the tribute of 'function'. Many academics are of the view that knowledge has hierarchical feature depending on its extent, depth, meaning, and conceptualization, and value, which is discussed as follows:

Traditionally, hierarchy of knowledge is presented as in Figure 2.1.

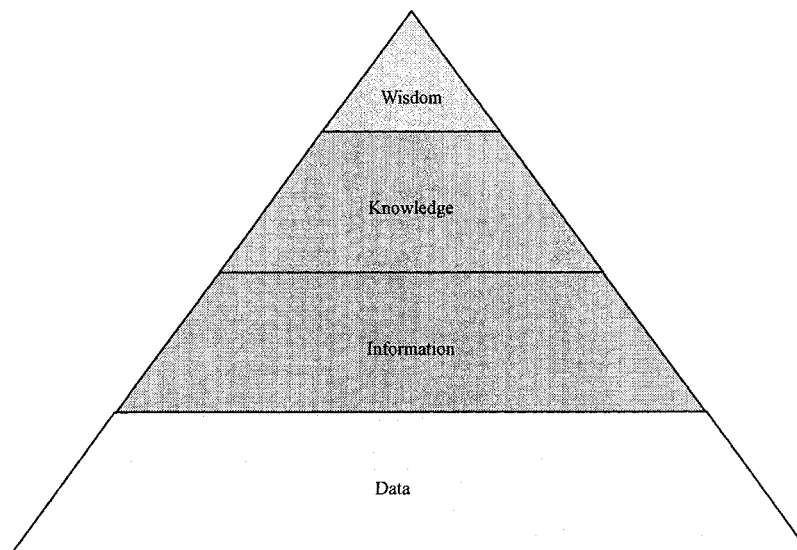


Figure 2.1: Traditional Hierarchy of Knowledge

Source: Ackoff, 1989.

Data refers to a set of discrete, unprocessed and unrelated texts, figures, facts, images and symbols, and so on, such as price indexes, GDP or current monthly business turnover. According to Davenport and Prusak (1998), data is a set of discrete, objective facts about events.... Data describes only a part of what happened; it provides no judgment or

interpretation and no sustainable basis of action....Data says nothing about its own importance or relevance.

Information refers to the accumulation of data into a meaningful context, such as comparison of monthly turnover. Drucker (1997) writes, in his book, *Managing in a Time of Great Change*, for raw material (data) to become information, it must be organized for a task, directed towards specific performance, applied to decision. He concludes that there are four types of information that a business needs: foundation, productivity, competence, and resource-allocation (1997, pp. 114-118). Nonaka and Konno (2000) believe that information can only be transformed into knowledge by the facilitation of “Ba” (it roughly means a place in English)

Knowledge refers to information plus experience; Brooking (1999) put it as contextual information plus understanding. Because the concept of knowledge is complex and controversial, it is understandable that it has been explained and approach in many different ways (Jakubik, 2007). Lists below are the definitions of knowledge suggested by some of modern management academics and practitioners.

Davenport and Prusak (1998) view knowledge as a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides an environment of and framework for evaluating and incorporating new experience and information. It originates and is applied in the minds of knowers. In organizations, it is often embedded not only in documents or repositories but also in organizational routines, processes, practices and norms. Wiig (1993) thinks that knowledge consists of truth and beliefs, perspectives and concept, judgments and expectations, methodologies and know-how. Spek and Spijkervet (1997) see knowledge as the whole set of insights, experiences, and procedures that are considered correct and true and that therefore guide the thoughts, behaviors, and communications of people. Therefore, the meaning of knowledge in fact has multifaceted dimensions. It can refer to message, perception, cognition, wisdom, cognizance, science, experience, technique, insight, competence,

know-how, capability, and learning and its application depends on the contexts. In organizations, knowledge can be summed up as two categories. First, knowledge is perceived as information (information systems and information flow orientation), including data, documents, graphs, e-mail messages, internet information, and so on; Second, knowledge is viewed as human resources (people orientation), including customers, employees, business flow, training program, team interaction, informal meeting (Radding, 1998). Sheffield (2008) has identified three underlying perspectives on knowledge: objective, social and personal, and claimed that these perspectives are neither mutually exclusive nor incompatible with each other.

Many academics have made some distinctions between information and knowledge. Nonaka and Takauchi (1995), describe the distinctions as follows: First, knowledge is about beliefs and commitment; second, knowledge is about action; and third, knowledge is about meaning. This study believes that the distinctions made by Coleman (2000) are more detailed and clear, which are listed in Table 2.1.

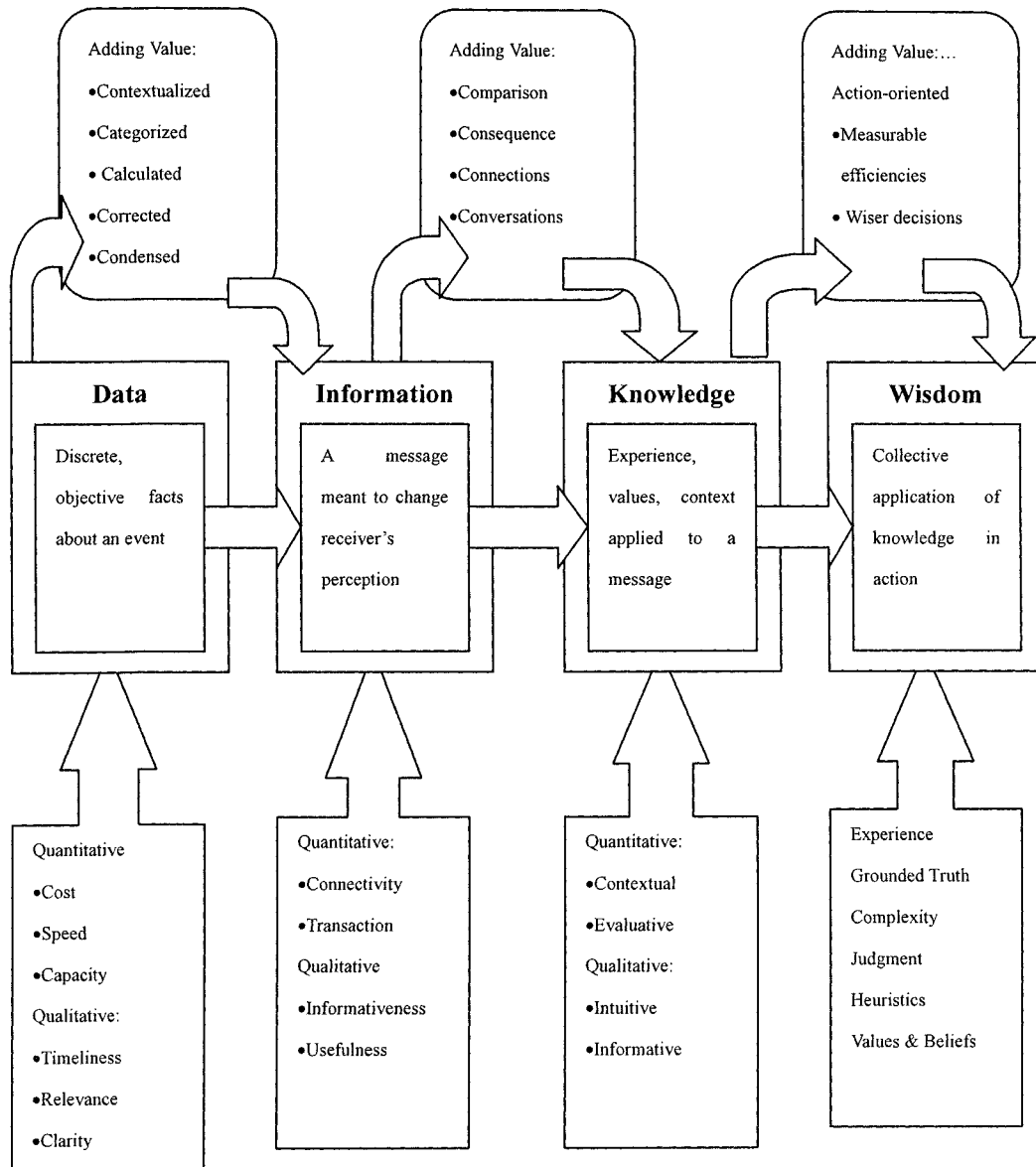
Table 2.1: Difference between Information and Knowledge

Information	Knowledge
Information and data are linked to each other	Knowledge, data, information are related, but not necessary linked.
The quantity of information is more than that of knowledge	The quantity of knowledge is less than that of information
Information sometimes is based on contexts	Knowledge is always in contexts
Information can be created by people and computers	Knowledge can be created only by people
Information is easily understood and transferred	Knowledge is not easily understood and transferred
Information is usually static	Knowledge is usually dynamic
Information is single-loop learning	Knowledge is double-loop learning
Information is easily integrated	Knowledge is only integrated before meaning is formed
Creation and sustention of information is costly	Creation and sustention of knowledge is even more costly
Information can be used by anyone at any time	Knowledge usually has limitation to time and importance of targets

Source: Coleman (2000)

Wisdom is the utilization of accumulated knowledge (Wu, 2002). Generally speaking, most researchers and practitioners organize knowledge into the above four layers of

Figure 2.2: The Knowledge Progression



Source: Sena and Shani (1999)

knowledge hierarchy. However, Beckman (1999) adds expertise and capability between knowledge and wisdom, which makes up total six layers of knowledge hierarchy. *Expertise* refers to knowledge and selection, experience, principles, constraints, and

learning, which can be used to achieve fast and accurate advice, explanation and justification of results and reasoning. In other words, expertise applies knowledge and heuristics appropriately and efficiently to achieve fast and accurate performance under resource constraints (Liebowitz and Beckman, 1998). *Capability* refers to expertise plus integration, distribution, and navigation, which includes knowledge repository, integrated performance support system, and core competence (Beckman, 1999). Capability, the highest form of knowledge in Beckman's hierarchy of knowledge (five layers), is the organizational capability to perform a process, produce a product, or a service at a high level performance.

The progress of data, information, knowledge, and wisdom that was discussed above can be presented in Figure 2.2.

2.2.2 Types of Knowledge: Explicit and Tacit

Since ancient Greek period, there have been heated debates about the nature of knowledge and epistemology on philosophy and management and up to now the debates are still going on because a set of clear and complete results are difficult to achieve. Types of knowledge are also part of the debates (Nonaka and Takauchi, 1995; Radding, 1998; Stenmark, 2002; Assudani, 2005; Sheffield, 2008) Researchers approach knowledge from different point of views, thus different typology of knowledge turn out as a result. These typologies may be true from their particular point of views. After all, it is almost impossible to develop a theory or a principle that can fit all situations in the world. However, it is helpful to have different views in the debates for the further development of theory, hence contributing to knowledge.

Human knowledge essentially is considered as a whole and is continuous and appropriate. Viewed from educational point of view, human knowledge is put into category only for reason of understanding and learning to take place. Furthermore, to make learning possible, it is necessary for us to classify knowledge for the benefit of learning,

transferring and storing knowledge.

Although there are researchers (Lundvall, 1996; Collins, 1993; Millar *et al*, 1997; Blackler, 1995; Fleck, 1997; and Blumentritt and Johnston, 1999) have identified many categories or types of knowledge in the literature, in this study, the author tends to use the types of knowledge: tacit and explicit proposed by Polanyi (1962) because this classification accommodates the knowledge classification of philosophical and managerial views.

Explicit knowledge is knowledge that can be captured and written down in documents or databases. Explicit knowledge is documented and public (McNabb, 2006); structured, fixed-content, externalized, and conscious (Nonaka and Takauchi, 1995) manuals, standard operations, course or books (Hubert, 1996), and is precise and formally articulated (Lin and Tseng, 2005; Srdoc *et al*, 2005).

Tacit knowledge is the knowledge that people have in their minds. Tacit knowledge resides in people, behavior, experience and perception. It is a kind of ‘we know more than we can say’ knowledge (Nonaka and Takauchi, 1995). It is the skills and ‘know-how’ we have inside each of us that is gained over time and through personal insights (Goh, 2002), and cannot be easily shared. It is much less ‘concrete’ and more valuable than explicit knowledge because it provides context for people, places, ideas, and experiences (Nonaka, 1991). Actually, most people are not aware of the tacit knowledge they themselves possess or its value to others. It is highly personal, hard to formalize, and thus difficult to communicate to others. It generally requires extensive personal contact and trust to share effectively. So its transfer requires skills and practices (Nonaka and Takauchi, 1995), and using processes that are less structured (Goh, 2002). Mooradian (2005) thinks that the concept of tacit knowledge is at the center of knowledge management.

There are two dimensions to tacit knowledge. The first is the technical dimension, which encompasses the kind of informal personal skills or crafts often referred to as

“know-how.” The second is the cognitive dimension. It consists of beliefs, ideals, value, schemata, and mental models which are deeply ingrained in us and which we often take for granted. While difficult to articulate, this cognitive dimension of tacit knowledge shapes the way we perceive the world (Nonaka and Konno, 1998).

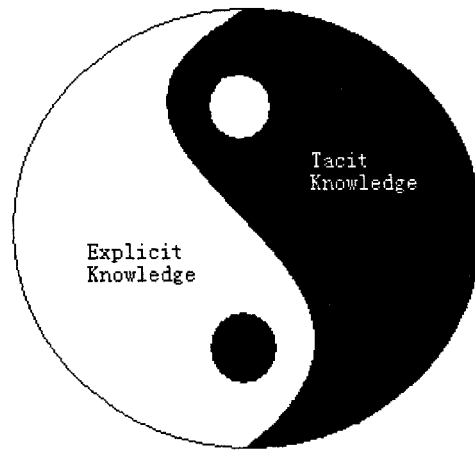
Therefore, explicit knowledge can be expressed in formal and systematic language, and also can easily be recorded, written and transmitted. It is a people-to-document approach, focusing on utilization of IT to collect, codify and store knowledge in order for retrieval and use by people. In contrast, tacit knowledge is very difficult to be recorded, transmitted, expressed and communicated in a formal manner. It is a people-to-people approach, emphasizing on face-to-face communications to share knowledge through conversation, brainstorming, story-telling, and community of practice (Daft, 2004). Because of the nature of the two types of knowledge, governments, businesses, universities, and research institutes have all invested a huge amount of money on management and diffusion of explicit knowledge, ignoring the fact that the most potential source of competitiveness is coming from tacit knowledge, hence resulting in a waste of human capital. How to make the two works most effectively is a great challenge for both researchers and practitioners. Polanyi (1966) suggests it can be achieved by knowledge conversion process. He argues that it is impossible for explicit knowledge, even there is more explicit knowledge available, to be converted to tacit knowledge because they belong to different layer. Therefore, there is a need of conversion process in which actionable knowledge is converted.

More than 2500 years ago, Chinese scholars began to be aware of the nature of different kinds of knowledge. A textbook for explanation of “Yi Jing” (philosophy of change) said: “Writing could not fully describe what the people want to say; speech could not express what the people want to think.”

Although explicit and tacit knowledge have been understood as a dichotomy, the author believes that the two types of knowledge are not necessarily mutually exclusive. It can be

complementary system as explained by the traditional Chinese ‘Yin and Yang’ theory. Yin and Yang are the two opposing principles in nature in ancient Chinese philosophy. The former represents the feminine and negative while the latter the masculine and positive, they are a complementary system, of which nature is consisted. (See figure 2.3) Nonaka and Takauchi (1995) adopted this view toward knowledge conversion processes.

Figure 2.3: Explicit Knowledge and Tacit Knowledge Expressed in Chinese Yin and Yang Theory



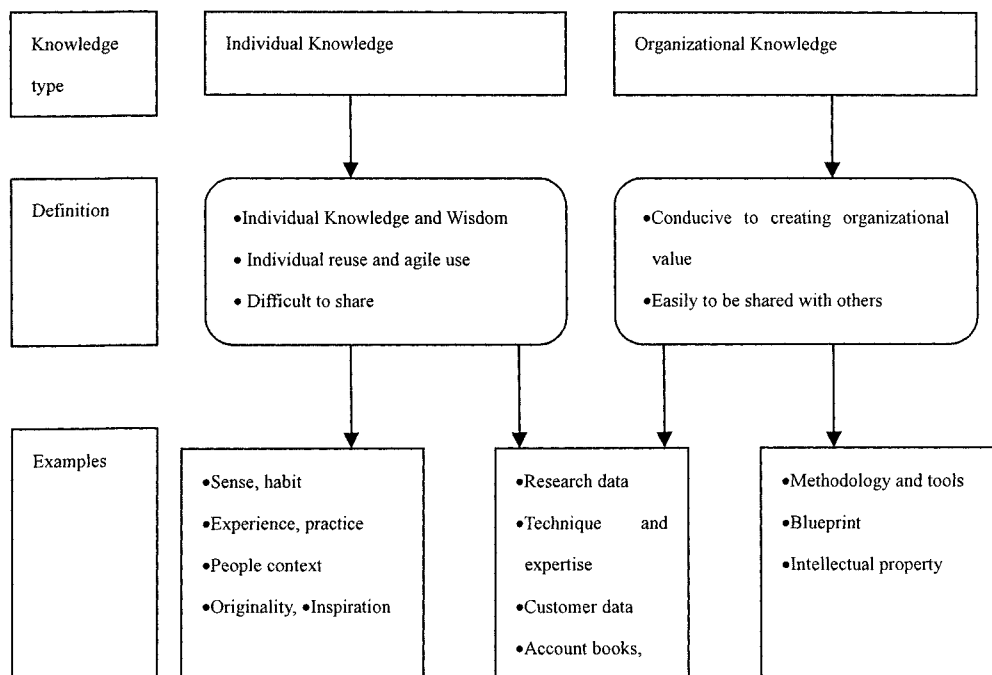
Individual and Organizational Knowledge

Arthur Andersen Consulting (2000) believes that, viewed from organizational point, knowledge in organization consists of both individual and organizational knowledge. Only are these two types of knowledge agilely applied can value as a whole become a multiplier (See Figure 2.4)

While classification of knowledge is of importance to learning, the concept of tacit knowledge that has been put forward is of great significance to the theory and practice of knowledge management (Li *et al*, 2002). First of all, information management has long been dealing almost exclusively with the object such as explicit knowledge, excluding

tacit knowledge from the scope of management and neglecting conversion between the two types of knowledge. However, it is tacit knowledge that creates the most value, because explicit knowledge can be readily acquired and imitated. Tacit knowledge cannot be easily imitated due to its intangibility. Consequently, it must be managed by reliance on the framework of knowledge management in order for organizations to gain and sustain most competitive advantage. On the other hand, it also expands the boundary of knowledge.

Figure 2.4: Comparison of Individual and Organizational Knowledge



Source: Arthur Andersen Consulting (1997)

Traditionally, knowledge has been understood as disciplinary knowledge as a subject matter, however, the concept of tacit knowledge that has been put forward has increased the scope of knowledge management to a point where it is between people to people, people to information, people to organizations, and people to the state and society. It is a people-centered managerial ideology, and humanist embodied management. Therefore knowledge management based on tacit knowledge as a subject will encompass every

activity and knowledge that connects with people (see table 2.2).

Table 2.2 Comparison of Views on Typology of Knowledge and Approaches to Knowledge Management Research

	Tacit Knowledge (Oriental) (Subjective)	Explicit Knowledge (Western) (Objective)
Features	<ul style="list-style-type: none"> •Knowledge of experience (body) •Simultaneous knowledge (here and now) •Analog knowledge (practice) •Impossibly or hardly expressible in language •Creation •Subjective and personal •Knowledge cultures •Knowledge communities •Nurturing and love •Long-term advantage •Growth through intercommunication with associates 	<ul style="list-style-type: none"> •Knowledge of rationality (mind) •Sequential knowledge (there and then) •Digital knowledge (theory) •Clearly expressible in language •Repetitive use •Objective and organizational •Knowledge projects •Knowledge markets •Management and measurement •Near-term gains •Compilation through external common language media
Ownership	Attached to person who possess the know-how, and hard to imitate and transfer	May be effectively protected by law, and easily transferred
Example	Experience, wisdom, know-how, and team skills	Design blueprint, symbols and codes, formulae, and computer program

Source: edited from Nonaka and Takauchi (1995), Cohen (1998) and Nonaka and Konno (2000).

2.3. Knowledge Management

The purpose of this section is to classify views of knowledge management for this research, drawing on the definitions of knowledge management of many academics and organizations and deriving the meaning of knowledge management for this research. Then the components of knowledge management are to be understood by introduction of knowledge management formulae.

2.3.1 The Definition of Knowledge Management

There is a host of definitions of knowledge management in the literature; however, no consensus has been achieved. Lists of the definitions of knowledge management are given as follows:

Wiig (1997) has defined knowledge management as the systematic, explicit, and deliberate building, renewal and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets. Beckman (1999) believes that knowledge management is the formalization of and access to experience, knowledge, and expertise that create new capabilities, enable superior performance, encourage innovation, and enhance customer value. According to O'Dell and Grayson (1998), knowledge management is a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organizational performance. In this process it includes steps such as knowledge creation, verification, collection, classified storage, sharing and retrieval, use and improvement, and elimination (O'Dell *et al*, 1998). Liebowitz (2000) believes that knowledge management is a process of applying organizational intangible assets to create value. It is a mix of knowledge-based systems, intelligence agent, software projects, enterprise process reengineering (EPR), human resource management (HRM), and organizational behaviors. Microsoft (1999) considers knowledge management as management science that intellectual capital can be viewed as manageable assets, and the main "tools" applied to knowledge management are organizational dynamics, process reengineering, and technology. It is through these three elements that extraction of organizational data, information, and knowledge are simplified and enhanced, and which are further provided to the individuals and groups that take part in and accomplish the specified work. Snowden (1999) assumes that knowledge management can be defined as to affirm, optimize, and manage intellectual capital actively, irrespective of whether is exhibited in the form of artifacts or in the form of tacit knowledge that possessed by individuals or communities.

Nonaka and Konno (2000) believe that knowledge management can be divided into two types: broad and narrow. Knowledge management in broad sense refers to management of knowledge, that is, the maximum value that is produced through the knowledge creating process, sharing, transfer and application and its effective exchange with intellectual assets and internal and external environment thereafter. In this process, there are four modes of combinations: purposes; process of knowledge creation; utilization of knowledge, and value. The interaction among the four modes of combinations can be explained in six steps: developing, adjusting and maintaining knowledge; leading knowledge creating process; sharing, transferring, and utilizing intellectual assets; accumulating intellectual assets; creating gains from intellectual assets; creating gains from innovation, problem solving, and knowledge provision. Knowledge management in narrow sense means the conversion process between knowledge-creation and utilization, that is, all kinds of activities involving with the sharing, transfer, and utilization.

From the literature review, it can be seen that knowledge management is no equivalence to so-called document management, information management (See Table 2.3) or a technological management system as those who are not familiar with it or may see it from a narrow point of view. On the contrary, knowledge management is a set of ideas and activities that must be built on human resource as a center, IT as a means and risk-taking innovation as an end so that knowledge, IT, organizational process and organizational culture are systemized, structurized, and integrated to enhance core competitiveness of organizations. High degree of creativity, willingness of sharing and trust are also included in the process. In this sense, therefore, knowledge management activities can be divided into four parts, each with its corresponding roles (Abell and Oxbrow, 2001) : (1) Organizational development: including leadership and visions, allowing for knowledge development space, encouraging knowledge creation, storage and process for use, redefining employment contract, managing and facilitating change, and focusing on utilization of intangible assets; (2) Culture: including redefining core value, learning, teaching, sharing, consultation, trust and security, empowerment, encouraging and

awarding curiosity, creativity and innovation; (3) foundation building: including science and technology, application, physical environment, total quality management (TQM), best practice, routines, maintaining on-going progress of foundation building in vision; (4) Content: involving the differences between intellectual capital and knowledge work capital, verifying and defining intellectual capital, creating links (i.e. people to experts or people to contents), building tools for acquiring, organizing, integrating, distributing and replying. In addition, from the point of the knowledge management scope, it can also be divided into internal and external; from knowledge management process, acquisition, creation, transfer... etc.; from knowledge management form, tacit and explicit; from knowledge management object, knowledge itself, knowledge repository or system, community of practice, communication channel and knowledge worker, etc.

Table 2.3: Comparison of Information Management and Knowledge Management

Information Management	Knowledge Management
Information count and order as an aim	Knowledge innovation as an aim
Static process	Dynamic process
Focus on explicit knowledge	Focus tacit knowledge
Aggregates of explicit knowledge	Conversion of explicit and tacit knowledge
Information resource centered	Customer need centered
IT + information resources	IT + information resources + human resource
Scientific technologist	Humanist
Information processing and preservation	Knowledge integration,application, and sharing

Source: Nonaka and Takauchi (1995)

The difference between information management and knowledge management was also well documented by Singh (2007).

2.3.2 Knowledge Management Formulae

The well known knowledge management formulae, $K = (P + I) \times S$ has been put forward by Arthur Andersen Consulting. In the formulae, K = Organizational Knowledge; P = People; I = Information; + = Technology; S = Share. It has been modified as knowledge management = $(P + K) \times S$. The formula denotes that the accumulation of organizational

knowledge must be achieved by technology combined fully with people and information to gain multiplier effect under an organizational culture of sharing. At the same time, it also can be seen that the essence of knowledge management is the degree of sharing. That is, traditional notion of “knowledge is power, hence hoard it” must be transformed into “knowledge is competence, hence share it and make it multiply” (Allee, 1997).

2.4. Evolution and Application of Knowledge Management Research

In this section, evolution, paradigm shift, and schools of knowledge management, then the current knowledge management activities are introduced, and finally the application of knowledge management to different fields discussed.

2.4.1 Evolution of Knowledge Management

Any new discipline that emerges in conformity with the needs of the development of society is the synthetic and innovative products of theories that inherited from the past and experiences that have been newly developed in practice. Knowledge management is no exception. The emergence of knowledge management is not without foundation. It has its trajectory that can be tracked (See Figure 2.5). Those familiar with modern management theories know that these theories, more or less, imply directly or indirectly that knowledge is studied as an important element of management activities. However, the role of knowledge has been strengthened with informationalization of content of management, automatization of means of management, democratization of management decisions, and scientification of management teams. Consequently, knowledge management as a new management model has been emerged as the times require. Knowledge management, succeeding to ‘quality movement of the 80s and ‘reengineering’ of the 90’s, has become one of the most dazzling management movement of the 21st century. Its root can be traced to the emphasis of ‘innovation’ and ‘human capital’. It is also a result of natural evolution of management ideology and consciousness.

Figure 2.5: Evolution of Knowledge Management

The 2000s
Knowledge Organization
Intellectual Capital
Enterprise Integration
Knowledge Sharing Culture

The 1990s
Core Competencies
The Learning Organization
Reengineering
Strategic Information Systems, Intranet & Extranet

The 1980s
Total Quality Management (TQM)
Management by Walking Around (MBO)
Job Design
Theory Z
Downsizing

The 1970s
Strategic Planning – Mintzberg & Porter
The Experience Curve
Portfolio Management
Automation

The 1960s
Theory Y
Conglomeration
T-group
Centralization and Decentralization

The 1950s
Management by Objectives (MBO)
Program Evaluation and Review Techniques (PERT)
Diversification
Quantitative Management
Electronic Data processing

Source: Tiwana (2000)

2.4.2 Paradigm Shift of Knowledge Management

Li (1999) has pointed out that the first generation of knowledge management emerged at the times of scientific management, exclusive of 'pre-modern' times. The place where accumulations of industrial intelligence were stored lied in the strategic tier and middle tier of staff (who were knowledge workers) and those who performed production works (who were labors) were not concerned with the task. There is very distinctive difference between the two tiers. Taylor (1911) argued that the development, accumulation, and application of industrial intelligence were the responsibilities of the former tier, while the production workers were only responsible for execution and their voluntary alterations of knowledge and norms defined by the former were entirely not encouraged.

The fall of the First Generation of knowledge management paradigm started from the 60's, and by the times of the 80s the situation had became even more clear that new paradigm of knowledge management, under the leadership of Toyota automaker in the name of 'sophistication production', had totally beaten the old paradigm of 'mass production' represented by the North American scientific management.

The defeat of the First Generation by the Second Generation of knowledge management paradigm, (represented by the first 'battle' won by Japan over the North America on the electronic industry of domestic appliance; The second one was on DRAM, and Intel was out in the end; The third one was on auto industry, lasting until the early 90s, at the time it was predicted by many people that the fall of Detroit was inevitable) relied not only on knowledge development of all the personnel within single organization, but also on that of a whole production collaboration network of personnel. The reason why the Second Generation could have beaten the First one may be because of the fact that the 'knowledge engine' of the former is dispersed, and that it is embedded all round the organizations, and that it is non-centralized.

In the middle of 90s, the Third Generation of knowledge management paradigm was

gestated in the North America, leading to reversion of the situation between the two sides of the Pacific. The Third Generation of knowledge management paradigm (with North America in the lead this time) was represented by the joint development of innovation, value (and customers). It is the 'Value Galaxy' that overthrew Michael Porter's value chains; that the interactive 'knowledge flows' that supplemented and reinforced the static 'knowledge repository'; that a market 'place' where values are exchanged is transformed into a 'forum' which the members of the galaxy can converse each other. The Third Generation of knowledge management paradigm as an economic system for management strategy is called the 'New Economy' or 'Knowledge Economy'.

In short, the First Generation of knowledge management is characterized as the utilization of knowledge within the organization, which is diffused by the strategic tier and middle tier of management staff (minority of decision makers) to the knowledge workers within the entire organization (all members of staff); the Second Generation of knowledge management defeated the centralized way of utilization of knowledge (the sum of knowledge of all the members of the organization and external suppliers) by way of 'knowledge engine' that is dispersed and embedded all round the organization. It is not until the Third Generation of knowledge management that the 'Value Galaxy' which linked innovation and value networks has superseded the production model of 'value chains' characterized as linear division of labor (joint exertion of knowledge of organizational members and suppliers plus customers and research institutes). Half step ahead of 'Value Galaxy', the Third Generation and Half of knowledge management, emphasizes the use of the frameworks that have self-organizing abilities and organic growth of living things to fully materialize the value of knowledge by combining knowledge of organizational members, suppliers, academic research institutes, customers, and 'all the people, known and unknown' such as the way the Linux has been approaching to its open software source code. Viewing from the new relationships between production and sales in the new economy, the vertical value chains and value system (each part is linked each other through competitions, oppositions, and price negotiating market transactions) advocated by Michael Porter have been considered

obsolete as a industrial worldview. In the knowledge economy, it is the each of the industrial members that creates values and share the results together that makes up of Value Galaxy, in which its knowledge flows are dependent on carrying out a collaborative and sharing resource symbiotic network, such as Internet, as 'enabling technology'.

2.4.3 Schools of Knowledge Management

As a matter of fact, since human came into being, management of knowledge has been in existence, but without awareness of it by themselves and without structures. That knowledge began to be managed can be traced back to the time when human knew how to start the fire and the technique has been transferred to others. Economists, management researchers as well, have recognized the importance of knowledge in economic affairs and long been involved in the studies since an early stage (Hayek, 1945; Marshall, 1965; Penrose, 1959; Schumpeter, 1951; Nelson and Winter, 1977; Taylor, 1911; Mayo, 1933; Simon, 1945). Their contributions to the development of knowledge have been neglected in the past, however. Generally speaking, economists tend to focus more on storing, treatment, and quantifying knowledge and primarily concerned with building of the abstract models, while management researchers more on increasing, creating, and typifying knowledge and largely concerned with reasoning of practical experiences and day-to-day behaviors. One of the reasons why economists have such tendency may be found in the strong orientation toward the scientific thinking of economics and acceptance of the Cartesian view of knowledge and methodology, while the similar trend is found in management theories, but also there is another strong orientation toward the humanistic thinking of management. In other words, there are two streams in management studies, one is scientific and the other is humanistic. The studies on knowledge between these two streams in management studies and economics follow distinctive tracks, but very similar to the development process of Western philosophy (Nonaka and Takauchi, 1995).

Viewed from the point of management, it is concluded from the history of knowledge management that there are two schools: organization theory (humanistic) and IT

(scientific) (Radding, 1998; Srikantaiah, 2000; Koenig and Srikantaiah, 2000; Earl, 2001; Singh, 2007). IT school claims that knowledge consists of discernable things within information system and can be controlled, categorized and codified, transformed, and stored for use; It also considers IT as the solution to knowledge management issues and key factor, hence concentrates on the development of soft and hard wares for knowledge management systems (KMS), its primary interest concerns with technical problems, including data warehouse, agent intelligence (AI), decision supporting systems (DSS), and management information systems (MIS). On the other hand, the school of organization theory contends that knowledge is a type of media, achievement, and collective assets. It also assumes that knowledge management is a dynamic process, a complex set of dynamic skills, know-how, etc., that is constantly changing. It does not believe that IT can solve all problems and its argument is based on philosophy, sociology, anthropology, psychology, and organizational behaviorism, involving all aspects of intellectual capital and social capital.

This study, taking a synergized view, believes that knowledge management consists of the combination of multidisciplinary or domains of organizational leadership, communication, organizational culture, cognitive science and learning, motivations and incentives, training and education, human resource, organization process analysis and reengineering, and IT, etc. It is necessary that not only people and IT are managed, but also managed together. That is to say, knowledge management activities must combine the processing abilities of IT and innovative capabilities of people together to enhance the organizational competence as a whole to adapt to the environment.

Sviby (1997 and 2001) considers that knowledge management can be defined by looking at what people in the field are doing. Both among knowledge management-vendors (researchers and consultants) and knowledge management-users (companies and other practitioners) there seems to be two tracks of activities – and two levels (see Table 2.4). The two tracks can be referred to ‘Management of Information’ (scientific) and ‘Management of People’ (humanistic) as discussed above. The two levels refer to

individual perspective and organizational perspective. In table 2.4, the researchers and practitioners in the ‘Knowledge = Object’ column tend to rely on concepts from Information Theory in their understanding of knowledge, while those in the column ‘Knowledge = Process’ tend to take their concepts from Organization Theory. Therefore, attention must be given to both organization theory and information theory at the same time in the successful knowledge management projects. They supplement each other; neither of them can be emphasized and another neglected. Unfortunately, cases that focus on one and neglect the other can be found commonly in the researches.

Table 2.4: Comparison of Tracks and Levels of Knowledge Management

Knowledge Management		
Track/Level	IT – Track Knowledge = Object	People – Track Knowledge = Process
Organization Level	Reengineers	Organization Theorists
Individual Level	AI- specialists E- specialists	Psychologists

Source: Sviby (2001)

2.4.4 Current State of Knowledge Management Activities

Knowledge management activities, to the industrial world, are the development of knowledge industry. Knowledge industries, according to Drucker (1969), mean to produce and distribute ideas and information rather than goods and services. Knowledge industries mean to produce or create values by the knowledge industries to transform knowledge based intellectual property by applying IT into products that have value for consumers and users. Management processes of knowledge industries have gained the recognition of the large companies in the America. The encompassing knowledge management needs to have a set of broad plan and consultancy, treatment of content quality, synthetic safety and protection, staff training to support and maintain other knowledge-intensive activities in order to create a trustworthy knowledge environment.

Dow Jones Industrial Indexes in New York Stock Exchanges that reflects world financial trends and represents the American main frame industries adjusted its composite shares from November 1, 1999, substituting the four 'old economy' shares (Chevron oils, Good Years tiers, Sears Department Store and Union Carbide Chemicals) by 'new economy' shares (Microsoft, Intel, Home Depot and SBC communications). These trends are indicating the advent of the age of knowledge economy. The key to the success and failure of the management of the future organizations depends on whether the features of the networks and of knowledge economy society can be in command.

2.4.5 Application of Knowledge Management

Major applications of knowledge management are to solve the problems when events happen unexpectedly and that increasingly are going to happen. Below are some of the situations that may facilitate use of knowledge management: (1) In view of long term, knowledge has been seen as an important organizational asset and been increasingly changing the economic aspect of industry of the entire organizations; (2) originality is needed within organizations and the growth of knowledge work are accelerating; (3) New information, communications and technologies are continuously introduced into the organizations, new tools or platforms (i.e. intranet, soft ware group wares...) also appear in the organizations; (4) System developments pertaining to the theoretical dimension within the organizations are becoming increasingly important; (5) Consulting services are provided in the organizational reengineering.

The differences before or after application of knowledge management can be understood from the above mentioned situations, however, the extent that attention is given and that is applied can vary in different industries or at different stages. Different types of knowledge management can be even better understood in the following dimensions:

Application in Personnel Management

Personal data provided by staff can be used to build basic data, work history, work skills and qualifications, and job expectations. Rules that are deduced from the past knowledge can be used to not only inform staff of what kind of skills that are most needed by the organizations, but also the organization of how staff, should be educated and trained, hence enabling dual growth of the individuals and the organization. Oltra (2005) and Svetlik (2007) made a link between human resources management (HRM) and knowledge management and showed how the role of HRM can play in knowledge management.

Application in Financial Investment

Making a comprehensive view of the securities and investment industries, it can be seen that the decision making behaviors concern a great deal with the knowledge, backgrounds and experiences of the decision makers. Traditionally only figures are provided by the computer application systems in these industries or based on the figure so furnished various analyses are made, as to the future, forecasts and conjecture as a kind of behavioral pattern are taking form. Therefore, it is necessary to integrate these data into knowledge repository to cope with the fast changes (Hansen, Nohria, and Tierney, 1999).

Application in Medical Management

This mainly applies to management of medical effect. Not only the ways to save the cost are provided, but provision of medical quality, immediate personal medical plan and pre-cautious medical management are also guaranteed. Of course, its basic operation is based on the complex and clinical medical knowledge, however, through knowledge management the use of each medical resource can be controlled and medical quality enhanced as a whole. Some researchers such as Beveren (2003) and Sheffield (2008) have done knowledge management studies on health care.

Application in Marketing Management

Traditional marketing management pays more attention to the processing of sale figures,

and less attention to other functions of management, while the functions of knowledge management can be applied to expand and integrate the knowledge in the process of sale, to provide sale strategies and ways to cope flexibly, to evaluate the effectiveness of the sale and provide the professional trainings accurately and precisely, hence to make up for the weakness in the traditional marketing management. What is even important is that the whole sale mode or system can be fundamentally changed to make it even more effective. Bennett and Gabriel (1999) have done a study and analyzed the extents of the knowledge management systems operating within sample enterprises with respect to each company's use of teamwork, level of bureaucracy and centralization of decision making, innovativeness, and ability to cope with change and also examined respondents' views on the contributions of KM to marketing management.

Application of knowledge of intellectual property

This primarily applies to the companies with strong priority on science and research development, such as drug manufacturers and research and development institutes, its application exceeds management of patent rights in the past. Therefore, the systemic functions of knowledge management lie in the ability to obtain a numerical value after the effective calculation of all the knowledge or results of research and development. For example, Earl (2001) reported that Dow Chemical Company saved over 40 millions US dollars just in 18 months by managing their intellectual asset in patents maintenance cost alone.

Application of Project Knowledge Learning

As an organization is in transition to innovation and accomplishment of projects as an operational mode, the knowledge that had acquired when each project accomplished must be categorized and conveyed to each implementing member of the project, consulting companies, professional service companies, and spaceflight companies are some of the examples. Nonaka and Takauchi (1995) have introduced many examples of project knowledge learning among project team members in their seminal book. Kasvi *et al* (2003) also have done research in this area. Leseure and Brookes (2004) also have carried

out a research project dealing with knowledge management in project environment and the capability to transfer knowledge across project teams for knowledge learning to take place.

Therefore, effective knowledge management can help organizations to manage plans, customer services, project cooperation, and education and training . In the perspectives of business plan, product designs and project research and development in the organization, knowledge management may build up organizational capability to solve the problems across units by marshalling the ideas from the relevant experts, drawing on the wisdom of the masses, shortening research and development cycles, quickly and effectively popularizing projects, and knowing what everyone is doing, reducing replication of work; in the perspective of customer services, knowledge management may speed up the process to collect questions and complaints from the customers, to make fast responses to customer needs, and to enhance the quality of answers and effectiveness for a given period of time to satisfy the customers; in the perspective of strategic planning, due to ever changing environment, organizations should continuously modify their strategies due to the ever fast changing environments. Knowledge management may span across the organizational hierarchy to share information, to make the storage and retrieval of data about organizations, competitive information and market intelligence carry on systematically, and to provide good decision support and to take action on full information; in the perspective of education and training, effective knowledge management may provide the mechanism for online learning, to enable staff all round world to acquire new knowledge and improve work skills and life time learning.

This author believes that the scope for the application can be as broad as to include the state organizations, or as narrow as an individual, depending how they are applied. However, the application of knowledge management does not confine only to what have been discussed above, which is an iceberg of knowledge management, but they should be applied in a manner that the four elements of people, process, culture, and technology must be integrated together. By doing so, human, material, financial resources and other

resources as well within the organizations can be employed most effectively to achieve the desirable objectives of organizations.

2.5 Effective Operational Model of Knowledge Management

The main purpose of this section is to discuss the mechanism of knowledge management which consists of two main parts: Processes and enablers of knowledge management. The conjugation of these two parts is the best match of the operational model of knowledge management.

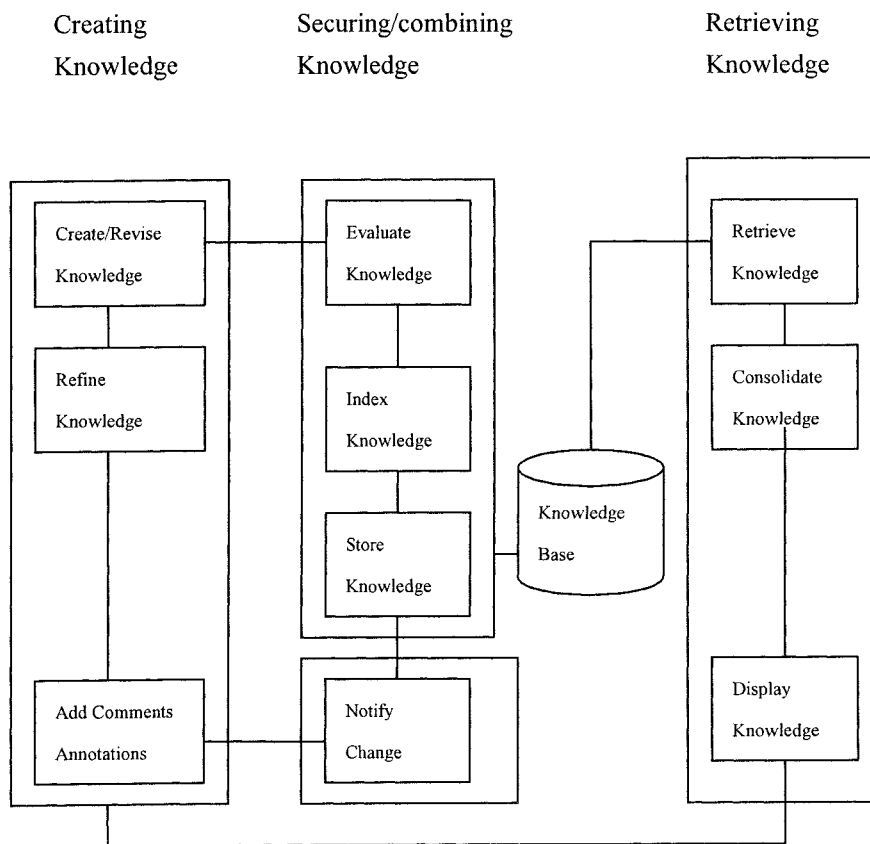
2.5.1 Processes and Issues of Knowledge Management

Academics usually distinguish many types and steps of processes of knowledge management as a starting point to discuss the subject. For example, Spek and Spijkervet (1997) consider that there are four basic activities of knowledge management: creating knowledge, securing/combining knowledge, distributing knowledge, and retrieving knowledge (Baek *et al*, 1999) as shown in Figure 2.6. Baek *et al* (1999) made a comparison among ‘knowledge creating company’, ‘learning organizations’, and absorptive capability and found that each has distinctive transforming strategy of its own. Nonetheless, all of them have provided the conceptual models for knowledge to be transformed from individual knowledge to organizational knowledge as shown in Table 2.5.

Drawing from the literature, Tan *et al* (1999) seem to have the most complete descriptions of the subject. They comprehensively discussed the topic by reviewing and classifying the existing knowledge management, and proposed 18 propositions in accordance with nine types of knowledge management topics. Later Tan (2001) developed 10 attributes of knowledge strategies, adding the propositions up to 20 items. They both approach knowledge management from the process point of view. According to Chen (1998, p.13), knowledge management topics can be distinguished as nine categories: (see Figure 2.7) (1)

managing knowledge of (1) selection; (2) acquisition (3) learning; (4) creation; (5) dissemination (6) construction; (7) storage; (8) management systems; (9) culture. They assume that knowledge in the organizations are partly sought from outside (external knowledge), partly created within the organizations (internal knowledge). In order to obtain external knowledge, organizations must go through selection, acquisition, learning and other processes. When knowledge is learned and created, some knowledge needs to be diffused to other members and units in the organizations (knowledge diffusion); some of knowledge can be constructed to be more systematic information (information construction). Finally, knowledge is put in a particular form to be stored in organizational memory (storage of knowledge). All these activities are based on appropriate knowledge management culture and systems (Tan *et al*, 1999)

Figure 2.6: An Overview of Knowledge Management Process



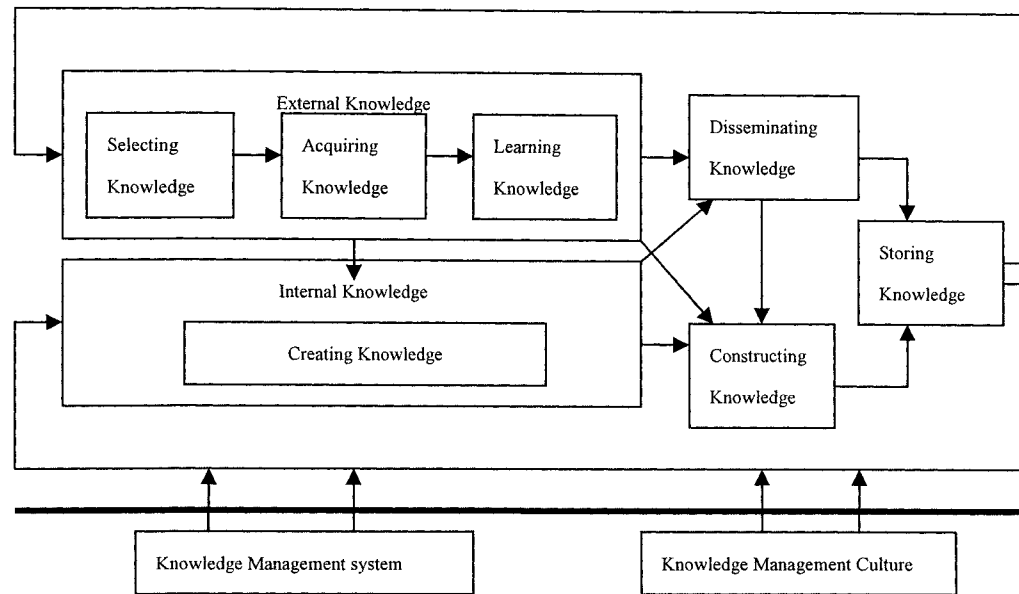
Source: Baek *et al.*, (1999)

Table 2.5: A Summary of Three Organization Theories

Theory/Activity	Creating Knowledge	Securing Knowledge	Distributing Knowledge	Retrieving Knowledge
Knowledge-Creating Company (Nonaka, 1991,1994)	Knowledge is created through interactions between tacit knowledge and explicit knowledge at two different levels: the individual and the group levels.	Once the task of a team is completed, team members incorporate tacit knowledge acquired and created in the project with explicit knowledge in the forms of documents and report.	Knowledge is disseminated by building a cross-functional, self-organizing team.	The knowledge created is tested by various departments within the organization. This is called a “crystallization process”.
Learning Organization (Senge, 1990)	Knowledge is created through communication of individual learning among co-workers.	Besides formal knowledge, informal knowledge in the form of tacit know-how, letters, memos, informal conversations should be captured, shared, and reused.	A variety of mechanism can be used for spreading knowledge quickly and efficiently throughout the organization; this includes written oral, and visual reports; site visits and tours; personal rotation programs; education programs and seminars.	Through double-loop learning, individuals continuously update the existing norms, procedures, and policies in the organization based on their experiences.
Absorptive Capability (Cohen & Levinthal, 1990)	Knowledge is created based on prior knowledge. In other words, the process of creating knowledge can be characterized as the process of assimilating new knowledge into preexisting knowledge.	When new knowledge is added, the existing linkage and associations among different knowledge sources need to be modified.	Individuals who stand between subunits within the organization, capture, translate, and disseminate external information in order to allow other co-workers to share it.	All available knowledge can be combined by establishing new linkages with preexisting knowledge. Diverse knowledge sources are closely linked in a shared memory.

Source: Baek *et al.*, (1999)

Figure 2.7: Process View of Knowledge management Classifications



Source: Tan *et al*, (1999)

Viewed from the discussion of knowledge management and its meanings, major topics and activities of knowledge management can be drawn as roughly as follows: acquisition, filtering, flow, creation, diffusion, storage, transfer, integration and application of knowledge. However, one of the most frequent difficulties encountered by most of the researchers in the study concerning knowledge management process is that some of other relevant topics are unavoidable when a particular one is being discussed. Therefore, talking one topic by itself almost is impossible because the nature of the issue makes it hard to detach it from one another. Sometimes issues that are observed from different angles lead to different definitions used when the same topic is talked and differences and overlap arise over the defined scope perceived by one another (Srikantaiah, 2000). One of the reasons might be the subsequent result of a continuous, ever changing, and dynamic process of knowledge management.

This research does not intend to discuss all processes in the literature, but to choose five of the most common ones for discussion, which are knowledge acquisition, creation, conversion, transfer, and storage. On the other hand, to avoid repetition, only those

representative ones are introduced. Some conclusions will be drawn in the end.

2.5.2 Acquisition of Knowledge

Evidence has shown that literature on management of acquisition of knowledge appears less discussed in relation to other domains. However, taking perspective view is one of the most common approaches to a topic as such, for example. Smith (1995, cited by Tan, 2001) pointed out five perspectives of knowledge acquisition, which include goods, relationship between companies, relationship between industries and universities, public organizations, and personnel mobility. Tan *et al* (2001) have proposed some perspectives of the knowledge management principles, including the target oriented, and focused interactions between perspectives, importance of information, network relationships and technological integrations, which are necessary conditions for organizations to obtain knowledge external to the organization. Literature discussed above places great emphasis on the ‘subject’ of management of perspective, while Nonaka and Takuchi (1995) proposed two types of ‘objects’: ‘People’ that assume the duty of acquiring knowledge. One type that consists of working team(s) or task force(s) is a group of people who possess all kinds of skills in technology, organization and interpersonal relationship, assuming the role of seed; the other is the managers in the organizations. This is because people in top management do not necessarily understand knowledge reality, while front-line employees have no authority and/or capacity to diffuse knowledge to the organization, thus middle managers in the organization are to serve as the main players in acquiring knowledge.

This research considers that source of knowledge acquired can be put roughly into two main categories: internal and external, which are further divided as organization and people. Furthermore, attention should be paid to the variety of sources and convenience of acquisition of knowledge. As far as knowledge users are concerned, it is very important for them to gain the convenience and variety in channeling knowledge, irrespective of whatever the ways are used to acquire explicit and tacit knowledge. Consequently, such

an expedient channel should be provided by the organization to the knowledge users.

2.5.3 Conversion and Creation of Knowledge

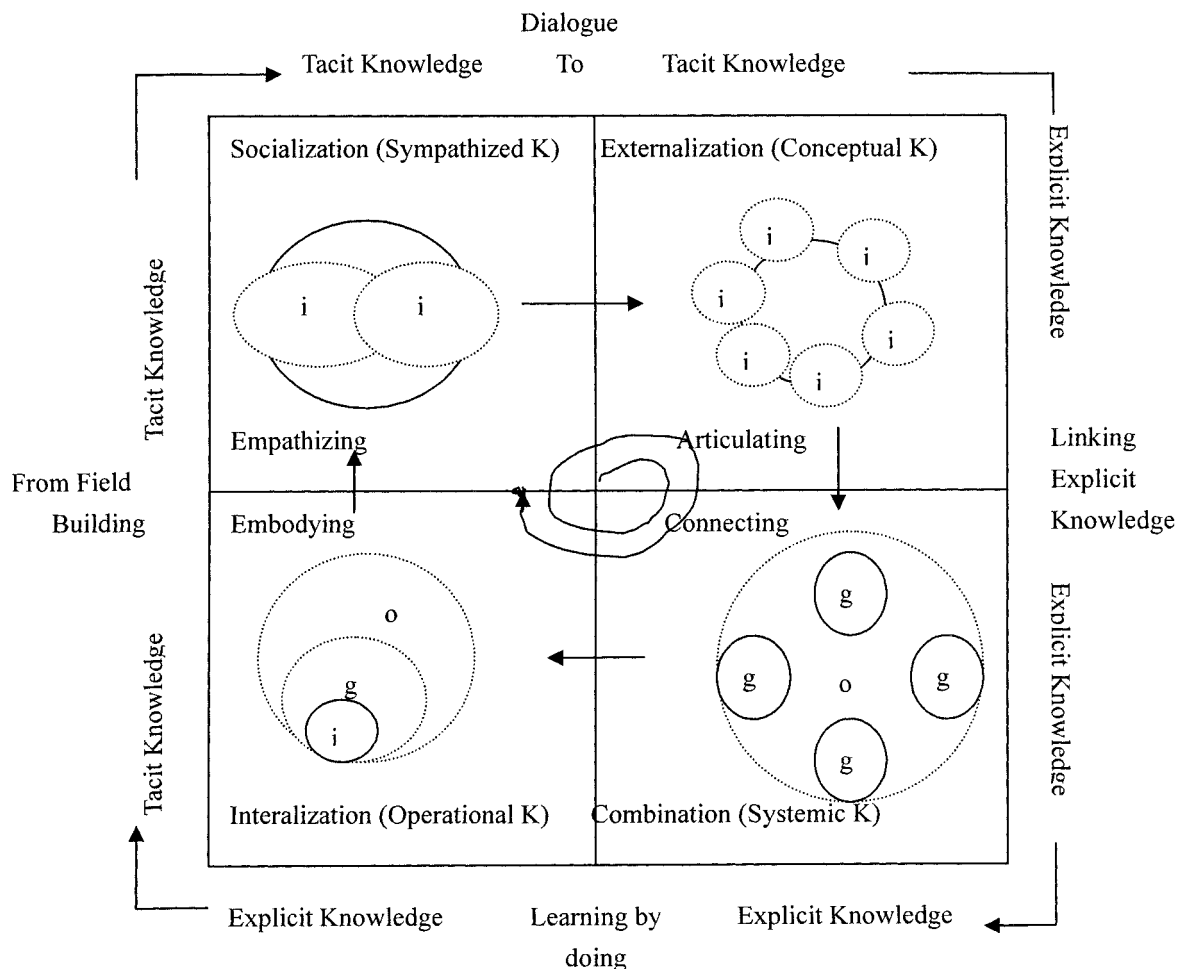
In this section, knowledge conversion and creation are discussed together due to their close interlink and interplay between the two concepts.

Knowledge Conversion Model

Ikujiro Nonaka, a professor at Hitotsubashi University and the University of California at Berkeley, is a pioneer in the theory of knowledge creation. First, Nonaka and Takauchi (1995), in their book, *The Knowledge Creating Company*, articulated that the key to success of Japanese companies lies in the thinking that knowledge in Japan is perceived as the products of oneness of body and mind. Then, they went on further to criticize the Western management and organization theorists about their being influenced by the preconceived view of focusing the core concern on the acquisition, accumulation and utilization of existing knowledge and lacking the perspective of creating new knowledge, and especially about being influenced by Argyris and Schön's (1978) theory of organizational learning that single-loop learning can be managed by organizations, while double-loop learning can be very difficult to implement by themselves, hence some kind of artificial intervention is required. In addition, Nonaka and Takauchi (1995) also consider the 'learning organization' proposed by Senge (1990) as basically lacking "the view that knowledge development constitutes learning" and often are trapped in a behavioral concept of "stimulus-response"; at the same time, seeing only the parts, someone inside or outside an organization "objectively" implement a non-self active way of learning through an artificial intervention. A Cartesian-like view of organization lies behind this assumption. Therefore, they have proposed that organizations can create knowledge by converting knowledge between explicit and tacit. That is, the key to creating knowledge lies in utilization and conversion of knowledge. There are four modes of knowledge conversion in the whole interactive process, which are: socialization, externalization, combination, and internalization, which is renowned for SECI Model.

Socialization involves the sharing of tacit knowledge between individuals through joint activities, physical proximity. Internalization requires the expression of tacit knowledge in publicly comprehensible forms. Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge: communication, dissemination, systematization of explicit knowledge. Internalization is the conversion of externalized knowledge into tacit knowledge on an individual or organizational scale and is the embodiment of explicit knowledge into actions, practices, processes and strategic initiatives. (SECI Model) (Figure 2.8 and Table 2.6) (Nonaka and Takauchi, 1995; Nonaka and Konno, 1999; Nonaka *et al*, 2001)

Figure 2.8: Spiral Evolution of Knowledge Conversion and Self-transcending Process



Source: Nonaka and Takeuchi, 1995; Nonaka and Konno, 1999; Nonaka, *et al*, 2001

Table 2.6: Knowledge Conversion Model and Paralleling Targets, Intellectual Assets and Mechanism

	Socialization	Externalization	Combination	Internalization
	Sympathized Knowledge	Conceptual knowledge	Systemic Knowledge	Operational Knowledge
Purpose	Creating tacit knowledge	Articulating tacit into explicit concepts	Systemizing concepts into a knowledge system	Embodying explicit knowledge into tacit knowledge
Proportion	Tacit > explicit	Tacit \geq explicit	Explicit > tacit	Explicit > tacit
Knowledge Assets (KA)	Experiential KA <ul style="list-style-type: none"> •Skills and know-how of individuals •Care, love, trust, and security •Energy, passion, and tension 	Conceptual KA <ul style="list-style-type: none"> •products concepts •Design •Brand equity 	Systemic KA <ul style="list-style-type: none"> •Documents, specifications, manuals •Database •Patent and licenses 	Routine KA <ul style="list-style-type: none"> •Know-how in daily operations •Organizational routines •Organizational culture
Mechanism	Creating knowledge through shared mental models and technical skills	Tacit knowledge becomes explicit <ul style="list-style-type: none"> •by taking the shapes of metaphors, analogies, concepts, hypotheses, or models •Triggered by dialogue or collective reflection •by deduction and induction •First by using induction and deduction, if not working, then using metaphor and/or analogy 	<ul style="list-style-type: none"> •Combining existing knowledge through such media as documents, telephone, and networks •Reconfiguration of existing information through sorting, adding, combining, and categorizing of explicit knowledge, e.g. computer database 	<ul style="list-style-type: none"> •Through “learning by doing” •When experiences through socialization, externalization, and combination are internalized into individuals’ tacit knowledge bases in the form of shared mental models or technical know-how, they become valuable assets.
Method	•Not through	Expressed in	•Through media	•By verbalizing

	language but through observation, imitation, and practice •Informal, non-compulsory and any can participate, e.g. brainstorming, CoP.	language and Writing	<ul style="list-style-type: none"> •Exchanging and combining knowledge through documents, meetings, telephone conversations, or computerized communication networks •Systemizing different bodies of knowledge into organizational knowledge system through database systems 	<ul style="list-style-type: none"> or diagramming knowledge into documents, manuals, or oral stories helps individuals internalize what they experienced thus enriching their tacit knowledge. •Expanding the scope of bodily experience •Quick application of standardization
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Source: Summarized from Nonaka and Konno, 1999; Nonaka *et al*, 2000; and Nonaka and Takauchi, 1995)

Corresponding “Ba” in the Knowledge Conversion

Nonaka and others assume that there are four types of ba that correspond to the four stages of SECI model. Each category describes a ba especially suited to each of the four knowledge conversion modes. These bas offer platforms for specific steps in the knowledge spiral process. Each ba supports a particular conversion process and thereby each ba speeds up the process of knowledge creation (Nonaka and Konno, 1998).

Originating ba is the world where individuals share feelings, emotions, experience, and mental models. An individual sympathizes or further empathize with others, removing the barrier between the self and others. Here using epistemological metaphors, Nishida’s “I love therefore I am” stands in contrast to Descartes’s “I think therefore I am.” From originating ba emerge care, love, trust, and commitment. Originating ba is the primary ba from which the knowledge-creation process begins and represents the socialization phase. Physical, face-to-face experiences are the key to conversion and transfer of tacit knowledge. Organizational issues that are closely related to originating ba are knowledge

vision and culture.

Interactive ba = dialoguing ba: The *interactive ba* is more consciously constructed, as compared with originating *ba*. Selecting people with the right mix of specific knowledge and capabilities for a project team, task force, or cross-functional team is critical. Through dialogue, individual's mental models and skills are converted into common terms and concepts. Two processes operate in concert: individuals share the mental model of others, but also reflect and analyze their own. In addition, only organizational leaders play as the providers of *ba* for knowledge creation and make the sharing mental models be institutionalized in the corporate culture can externalization achieve the optimal efficacy.

Cyber ba = systemic ba: Cyber *ba* is a place of interaction in a virtual world instead of real space and time; and it represents the combination phase. Here, the combining of new explicit knowledge with existing information and knowledge generates and systematizes explicit knowledge throughout the organization. In collaborative environments, effective combination of explicit knowledge depends on how well IT is utilized.

Exercising ba represents internalization phase and facilitate the conversion of explicit knowledge to tacit knowledge. The key in this phase is to use explicit knowledge in real life to enhance the internalization of knowledge by learning and action.

Therefore, the SECI model describes the interplay of explicit and tacit forms of knowledge. This is accomplished through systems and structures, and a corporate culture, which facilitates the interaction concept of four modes of knowledge conversion processes. However, critical for Nonaka is the interaction dynamic between forms of knowledge and levels of organization. He believes that the spiral resulting from the exchange of explicit and tacit knowledge across different organizational levels is the key to knowledge creation and re-creation. The prescription is that companies should recognize the importance of this interaction dynamic and embed the mechanisms that make it possible.

Ba offers as a metaphor of integration of a dynamic knowledge conversion to create knowledge by self-transcendence. Ba in knowledge management is a place for dynamic knowledge conversion and emerging relations. Ba calls attention to the fact that knowledge is context-dependent: it cannot be separated from its “place” in any meaningful way. Each knowledge-creating process therefore requires a ba, a phenomenal space whose importance should be recognized by the organization. What the organization, in fact, should focus significant attention on the development is its bas since more is to be gained by developing the environment around knowledge processes than efforts directed at the processes themselves.

Process and Form of Knowledge Creation

Nonaka and Takuchi (1995) view the knowledge creation as upward spiral process, starting at the individual level moving up through expanding communities of interaction, which crosses sectional, departmental, divisional, and organizational boundaries. In this process, the integration of four modes of knowledge conversion of socialization, externalization, combination, and internalization are continuously taking place. This is the process of organizational knowledge creation. Nonaka *et al* (2001) believe that knowledge creation is a continuous self-transcending process in which individuals or organizations transcend boundaries of old self in accordance with the new contexts, worldviews and knowledge; it is much like human growth journey from youth to maturity, at the same time it also involves the interactions of the three elements in the process: SECI models, Ba, and knowledge assets.

Enabling Conditions, Phases, and Models for Knowledge Creation Process

Nonaka and Takuchi (1995) consider that there are five enabling conditions for the organizational knowledge creation. They are intention, autonomy, fluctuation and creative chaos, redundancy, and requisite variety. Then, they use the basic constructs developed within the theoretical framework and incorporating the time dimension into the theory to propose an integrated five-phase model of the organizational knowledge-creation process. The model consists of five phases: (1) sharing tacit knowledge; (2) creating concepts; (3)

justifying concepts; (4) building an archetype; and (5) cross-leveling knowledge. Finally, based on the principles of the five phases, they further propose a new management model of middle-up-down in contrast to typical “top-down” management or “up-down” management (Nonaka, 1998b; Nonaka and Takuchi, 1995) (see Table 2.7). They consider the new management model the key to knowledge creation process because it puts the middle manager at the center of knowledge management and redefines the role of top management as well of frontline employees, while the role of middle management has been almost neglected in traditional accounts of managerial structure.

Table 2.7: A Comparison of Three Management Models

		Top-down	Bottom-up	Middle-up-down
Who	Agent of knowledge creation	Top management	Entrepreneurial individual	Team (with middle managers as knowledge engineers)
	Top management role	Commander	Sponsor/mentor	Catalyst
	Middle management role	Information processor	Autonomous intrapreneur	Team leader
What	Accumulated knowledge	Explicit	Tacit	Explicit and tacit
	Knowledge conversion	Partial conversion focused on combination/externalization	Partial conversion focused on socialization/externalization	Spiral conversion of internalization/externalization/combination/socialization
Where	Knowledge storage	Computerized database/manuals	Incarnated individuals	Organizational knowledge base
How	Organization	Hierarchy	Project team and informal network	Hierarchy and task force (hypertext)
	Communication	Orders/instruction	Self-organizing principle	Dialogue and use of metaphor/analogy
	Tolerance for ambiguity	Create and amplify chaos/fluctuation not allowed	Chaos/fluctuation premised	Create and amplify chaos/fluctuation premised
	Weakness	High dependency on top management	Time-consuming Cost of coordinating individuals	Human exhaustion Cost redundancy

Source: Nonaka and Takuchi (1995)

Comparing views of the various researchers on knowledge creation and conversion, from which some similarities are drawn as follows: First, emphasizing knowledge creation requires participation of all team members; Second, member of organization must possess talents and skills of all kind and worldview of value; Third, an implementing and integrating system must be established; Fourth, different ways and methods must be used to promote the participation of members of organization together; Finally, consideration of introduction of knowledge from outside can be taken into account if it is too costly or unable to develop and created internally.

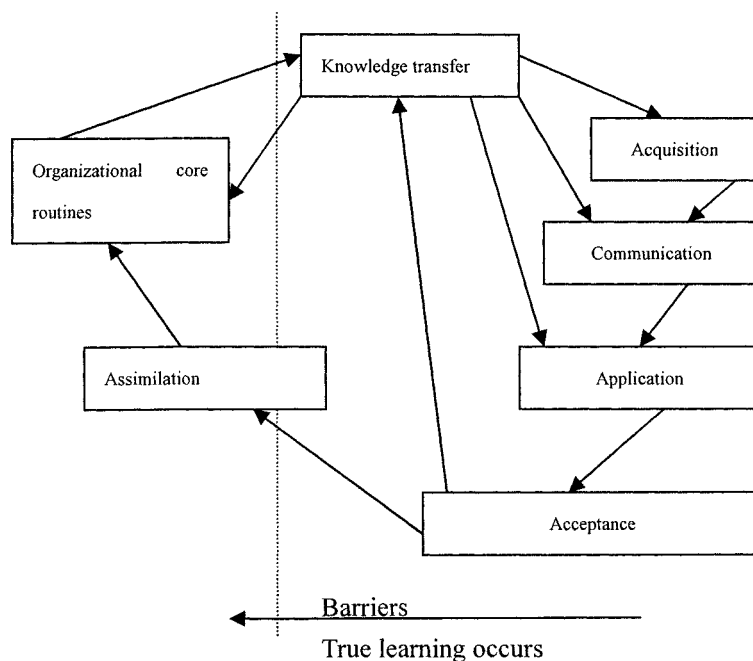
This author believes that knowledge creation is an ongoing and surging (spiral) cycle. Knowledge not only can be created within the organization, but also can be imported from outside the organization in order to increase and accumulate its knowledge and capability. To promote knowledge creation, an environment that is conducive to increasing the chance of interaction among its members must be designed and created in the organization, for example, through setting a vision to guide the direction of knowledge development, to encourage formal and informal communication and sharing, and to solve cross-unit problems. In addition, in order to enhance organizational adaptability, people with ability of adapting to various situations should be selected when recruiting and strategic rotation of people also should be carried out in the organization.

2.5.4 Knowledge Transfer

Gilbert and Cordey-Hayes (1996) assume that knowledge gap emerges when lack of certain kind of knowledge is realized in the organization. Under the circumstance, therefore, it requires knowledge be imported or transferred to the organization so that structure for transferring old knowledge be modified. They also propose a five-stage of knowledge transfer, which are: acquire → communicate → apply → accept → assimilate.

They see transferring organizational knowledge as a dynamic learning process that has several steps. In other words, learning takes place through past experience, practices, techniques introduced from outside and continuous surveillance over the outside world after knowledge has been acquired; at the same time, a communication system must be established to transfer knowledge efficiently; and then apply knowledge to promote organizational learning (see Figure 2.9).

Figure 2.9: Five-Stage of Knowledge Transfer



Source: Gilbert and Cordey-Hayes (1996)

This author also believes that transfer of knowledge facilitates knowledge, after it has been acquired, created, and accumulated in the organization, to be effectively disseminated to individuals and units within the organization, and ensures that it will be utilized and applied in the work. Methods and ways such as discussion, language, documents and IT can be used to promote dissemination of knowledge in order for knowledge to be transferred effectively.

2.5.5 Knowledge Accumulation

Knowledge accumulation refers to knowledge that is stored within the organization so that organizational knowledge can be reused to enhance leveraging effect of internal knowledge. There are two continuous stages in knowledge accumulating process: systematically organizing knowledge and putting knowledge in memory. Tan *et al* (1999) consider that storage of knowledge to be the ultimate end of knowledge management for organizations. Knowledge storage enables knowledge that is introduced from outside or that is created within the organization to be put in the form of “organizational memory” (Walsh and Ungson, 1991; Olivera, 2000; Coffey and Hoffman, 2003), which can be readily and easily accessed for use by any other member, any other organization at any time. On the whole, theoretically knowledge storage, either as a starting point or from domain, can be categorized as (1) storing knowledge in database; (2) embedding knowledge in the heads of employees by way of education and training. The former is more concerned with IT and networks, but it is not always the case, some are taking form of the traditional documents as a starting point (stored in documents); the latter are primarily concerned about how knowledge is spread between people (stored in people). Having reviewed the relevant literature, they identify with knowledge storage in three categories: knowledge is stored (1) by means of IT, which focuses on database and management information system as a means to store knowledge; (2) through experts who possess specific knowledge or personal memories; (3) in “object” that exist in the organizational structure, products and artifacts, and in works and activities (Tan *et al*, 1999).

It can be seen from literature review that the first step for accumulating knowledge is that knowledge must be effectively organized and categorized with an aim to systematically organize the experiences that an organization has acquired from the past and information obtained outside into knowledge that becomes useful to the organization. However, the key to systematic organization of knowledge lies in “standardization” (Rowley, 2000), that is to say, the organization achieve its aim of systematic organization of knowledge

not only through shared knowledge as a means of communication, but even more importantly, by an integrative mechanism that matches its knowledge needs. In other words, once knowledge is effectively categorized and organized within the organization and an appropriate index is provided with, then people in the organization can systematically and quickly find knowledge they need when using it. Furthermore, in the second step for accumulating knowledge, attention must be paid to the manners that knowledge is presented. On one hand, knowledge accumulation can be carried out by sound database system, where knowledge is structured (explicit knowledge) and documented; on the other hand, networking (Rowley, 2000), community of practice (CoP) and sound knowledge map (Davenport and Prusak, 1998; Wexler, 2001; Driessen *et al*, 2007) must be fostered and established to inform the organizational members of the location where such tacit knowledge lies and to enable them to find the knowledge they need effectively and quickly, where knowledge is not structured (tacit knowledge) and embedded in people and group.

2.6 Favorable Conditions for Enabling Knowledge Management

The main purpose of this section is to understand not only the internal process of knowledge management, but also the external stimulating mechanism that can be used to accelerate or enhance the success in practice. Conclusions are made by drawing on knowledge management frameworks, models, principles, and success factors proposed by researchers and practitioners as enablers that are conducive to knowledge management operations.

2.6.1 Frameworks and Models of Knowledge Management

Understanding the nature of knowledge, according to Allee (1997), is dependent on how we approach to it and actions, works, and relationships between the results. When we categorize, organize, and evaluate knowledge to some extent, on one hand, knowledge has physical quality. Here, focus is placed more on building knowledge repository or

other storing facilities; on the other hand, knowledge has flow quality by constant conversion of creation, adaptation, improvement, communication, and application, just like a dynamic flow of liquids that is filled with conversion and fusion of knowledge ingredients. These two views of knowledge are largely identical but with minor differences between “two dimensions of wave and particle” in quantum mechanics. The different interpretations arise from different concerns, and both of them are true. However, if taking system dynamics view (approach to knowledge in organization metaphor), knowledge is seen as a phenomenon that needs appropriate environment to be created. This view focuses on enablers such as culture, leadership, behaviors, norms and other supportive technologies.

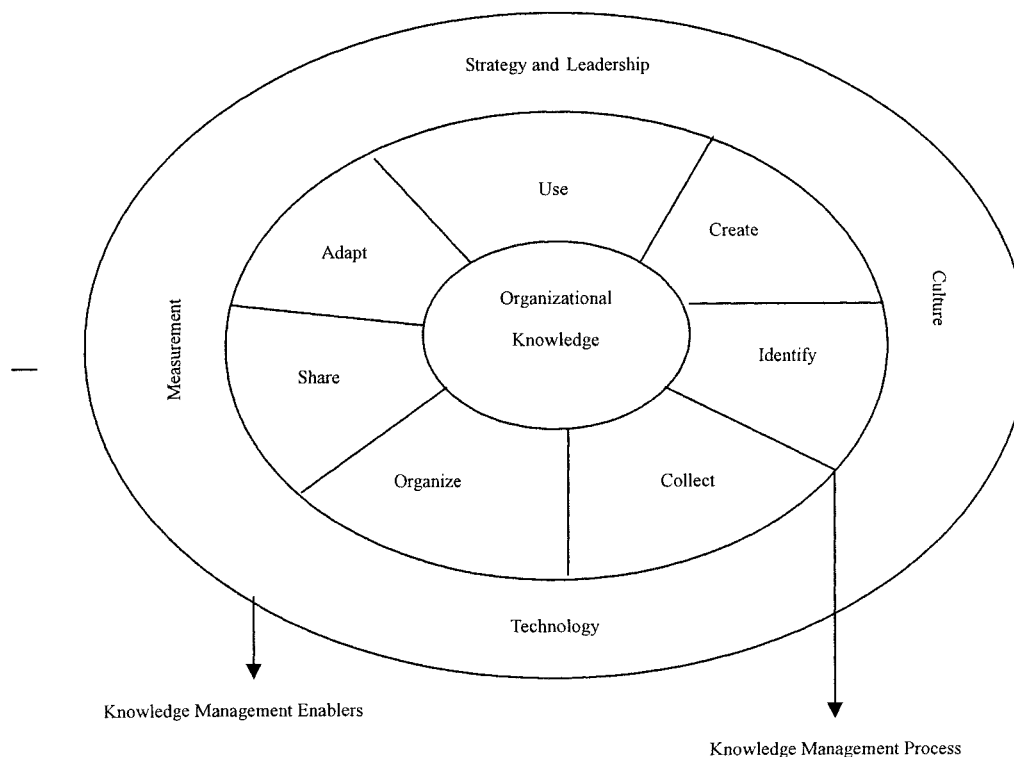
At present, most commonly applied view, when approaching knowledge management frameworks or models, is to take an integrative view, which is to fuse entity, process, and “knowledge ecosystem” in system dynamics. These views are introduced as follows:

In 1992, International Best Operational Reform Intelligence Center (IBC) was established within the American Productivity and Quality Center (APQC). IBC, apart from providing consultancy on best operational reform, is also a group that is practicing knowledge management itself. In addition, Arthur Andersen Business Consulting (AABC) is a practitioner in knowledge management as well. In 1997, they advanced a popularized knowledge management framework, which comprised of seven knowledge management processes that can operate on an organization’s knowledge and also identified four enablers that facilitate the working of the knowledge management processes (see Figure 2.10). Among the enablers, strategy, leadership, and culture are concerned with human resources, while IT and measurement are related to IT infrastructure.

Knapp (1998) presumes that a complete knowledge management framework should involve six elements: content, learning, culture, measurement, technology, and personal responsibility (see Figure 2.11)

Spek and Spijkervet (1997) presume that knowledge management consists of certain domains such as organizational culture, employee incentives, organization, management, and IT (see Figure 2.12). At the same time, they also consider that knowledge management primarily involves four activities: conceptualize, reflect, act, and retrospect. During the conceptualize activity, needs within the organization are understood and strong and weak points are analyzed in order to further acquire knowledge about outside environment; in the reflect activity, knowledge collected in conceptualizing activity is evaluated and selected using a variety of criteria, required improvement are established in order to promote planning work of knowledge management; in act activity, knowledge is managed and implemented, involving developing, distributing, combining, and holding knowledge. Finally, whether review and modify activity are needed is determined by evaluating the actual results achieved from implementation.

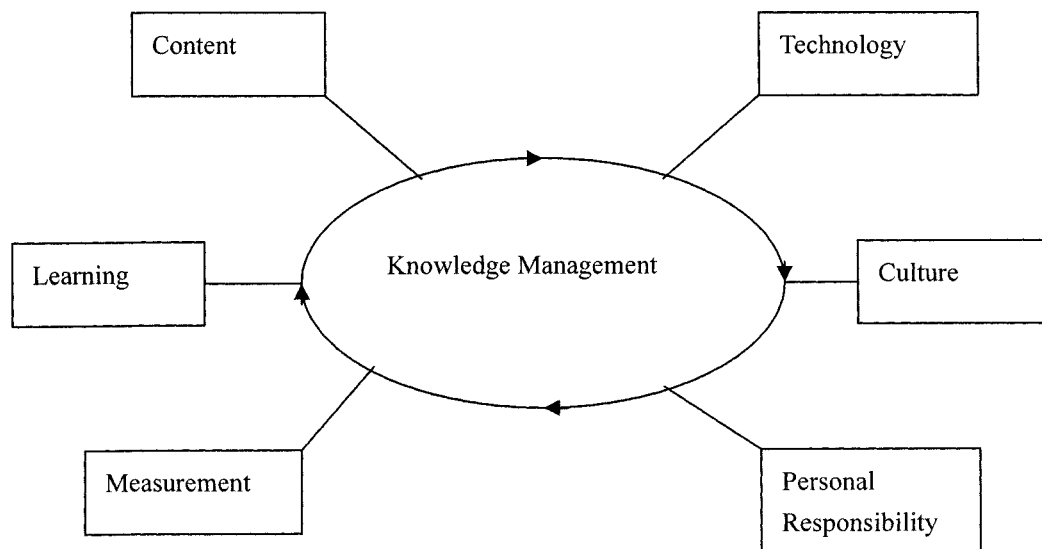
Figure 2.10: Framework for Knowledge Management



Source: APQC 1997

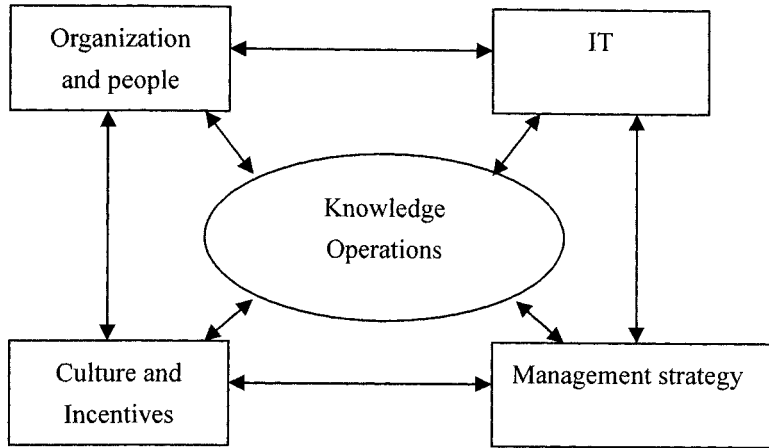
Earl (1997) suggests that effective knowledge management model includes four elements: knowledge systems, networks, knowledge workers, and learning organizations. Chait (1999) points out that effective knowledge management systems pays attention to three conditions: defining vision and aligning with organizational objectives, matching and supporting of the four constructs of management, and effective planning.

Figure 2.11: Knapp's Knowledge management Framework



Source: Knapp, 1998

Figure 2.12: Domains for Knowledge Operation Structure



Source: Spek and Spijkervert (1997)

Carla *et al* (1998) propose a model of knowledge management for best practice transfer that consists of three components: (1) value proposition: closer to customers, best products and services, and more effective operation; (2) four enablers: culture, IT, infrastructure, and measurement; (3) four steps: design, plan, implement, and popularize.

2.6.2 Principles and Success Factors for Knowledge Management

Researchers and practitioners have proposed many knowledge management principles and success factors, which are derived and distilled from the experience in practice and hence feasible and necessary in day-to-day operations. However, it is also imperative to develop a knowledge management environment tailored to each organization because of unique characteristic of the organization.

Davenport (1998) proposes the following ten principles of knowledge management: (1) knowledge management is expensive (but so is stupidity!); (2) effective management of knowledge requires hybrid solutions of people and technology; (3) knowledge management is highly political, hence there must be someone to lead and pilot; (4) knowledge management requires knowledge managers; (5) knowledge management

benefits more from maps than models, more from markets than from hierarchies knowledge must be made attractive and easy for use; (6) sharing and using knowledge are often unnatural acts, there must be incentives to match; (7) knowledge management means improving knowledge work processes; (8) knowledge access is only the beginning, great attention must be paid to the ability to grapple with opportunities in order to open the door to opportunities; (9) knowledge management never ends; (10) knowledge management requires a knowledge contract, because the categories of required knowledge are always changing. Furthermore, Davenport and Prusak (1998) have identified nine factors leading to knowledge project success: (1) a knowledge-oriented culture; (2) technical and organizational infrastructure; (3) senior management support; (4) a link to economics or industry value; (5) a modicum of process orientation; (6) clarity of vision and language; (7) nontrivial motivational aids; (8) some level of knowledge structure; (9) multiple channels for knowledge transfer.

Davenport, De Long and Beers (1998) have found in their research projects that, when an organization promoting knowledge management, attention should be paid to the following points: (1) a link is made to economic performance or economic benefit, or competitive advantage; (2) a technical and organizational infrastructure is developed in favor of knowledge management, including networked PC and IT software for communications, and unit or organizational systems, such as Chief Knowledge Officer (CKO), that can promote knowledge management; (3) a standard, flexible knowledge repository that can find the right balance in the knowledge structure is developed within the organization. A flexible and feasible organizational knowledge structure facilitates the promotion of projects in regard to knowledge development; (4) a knowledge-friendly culture is shaped to facilitate flow of knowledge and innovation; (5) a clear purpose, terminology and language for knowledge management is defined. knowledge management is different from information management (IM), hence a clear, widely-shared understanding of the objectives of the project to be promoted and definition of knowledge must be established within the organization; (6) an effective motivational system should be established also to encourage members to participate in the activities concerning knowledge management. It

is essential to set up such a motivational system that encourages people willingly to support knowledge management and participate in sharing and using knowledge. Ways used to motivate people can be both material and/or spiritual; however they must be nontrivial, direct and effective, especially for those so called intellectuals; (7) multiple channels that reinforce one another for knowledge transfer must be recognized that each adds value in a different way and that their synergy enhance use; (8) senior management support is gained to have their assistance in words, actions, and resources publicly and openly. It is not really necessary for senior management to participate in the knowledge management activities in person, of course, it helps if they do. However, it is essential for them to give support and recognition in attitude.

Greengard (1998) uses seven methods to match knowledge management activities: (1) senior management support: many knowledge management initiatives involve interaction with human resources, especially with the support from human resource director who plays the vital role; (2) form a cross-functional team, design a knowledge map, and find knowledge required; (3) define a sound knowledge management process (4) IT support; (5) develop a knowledge-sharing culture; (6) make knowledge management benefits visible to employees and make works easier, simple, and fast to handle, meanwhile human resource personnel can play the role of providing message, updating, and training; (7) embed knowledge management in the workflow.

Koulopoulos and Carl Frappaolo (1999) consider that knowledge management success factors consisting of three items: (1) Knowledge software and hardware: knowledge repository, knowledge auditing system and knowledge map; (2) leadership knowledge organization: knowledge leaders and knowledge workers; (3) knowledge management soft issues: knowledge clusters, knowledge sharing, knowledge ownership, and reward measures.

American Society for Training and Development (cited by Tang, 2000) has identified six key factors to knowledge management in practice: (1) senior management support; (2)

target-oriented knowledge management strategy; staff in charge of knowledge management; (4) providing reward and incentives for participation; (5) constant communication and popularization; (6) measuring achievement.

Wiig (1999) suggests that attention be paid to the following proceedings for successful introduction of the enterprise knowledge management practice: (1) develop a broad vision of the knowledge management practice and obtain top management buy-in; (2) pursue targeted knowledge management focus determined from knowledge landscape mapping insights and other opportunities and based on knowledge management priorities that align with enterprise objectives; (3) allow team members to focus full time on knowledge management and build knowledge management professional team; (4) install knowledge management impact and benefit evaluation methods; (5) implement incentives to manage knowledge on personal and enterprise level; (6) teach meta-knowledge to everyone; (7) ascertain that implemented knowledge management activities provide opportunities, capabilities, motivations, and permissions for individuals and the enterprise to act intelligently; (8) create supporting infrastructure.

Liebowitz and Beckman (1998) found, after their practical observation, that knowledge organization must do what they should done: (1) invest in education and training of the firms human capital; (2) develop knowledge repositories for preserving, sharing, and distributing knowledge; (3) provide incentives to encourage employees and management to contribute to the organization's knowledge repositories and use this knowledge; (4) consider evaluating annually each member of the firm on the quality and quantity of knowledge contributed to the firm's knowledge bases as well as the organizational knowledge used by that firm member; (5) develop methodologies for managing and structuring the knowledge in the knowledge repositories; (6) provide an infrastructure of individuals whose main job is to manage the creation, development, and maintenance of the knowledge repositories; (7) place the CKO in either a staff position directly under the Chief Executive Officer (CEO) or in a line position equivalent to a Vice President (VP); (8) adapt to the changing competitive environment by forming project teams based on the

employee knowledge profiles.

From the discussion of knowledge management models, frameworks, principles, and critical success factors, three important perspectives of enablers emerged, which are: information technology, management strategies, and organizational culture. However, it is hard to distinguish among these perspectives in practice because they are interwoven and interplayed one other. Discussing any of them will involve the meaning of others. The meaning of each perspective is discussed in the following sections.

2.7 Enabler for Knowledge Management – Information Technology Perspective

Information technology perspective of enablers for knowledge management refers to the IT infrastructure that facilitates and supports knowledge management activities, such as knowledge repositories, knowledge platforms, performance evaluation management systems, and integrated performance support systems (IPSS). It mainly offers knowledge storage, evaluation, transmission, communication, and exchanges and makes them faster, more convenient and more human. It can be seen that it is just the tool and media for knowledge management.

It is recognized that in early stage of knowledge management literature, much discussion has been made on information technology, or technology focused. At a later stage, academics and practitioners are realizing information technology is not the main issue in knowledge management. On the contrary, people should be the focused concern of knowledge management. This author believes information technology plays a very important role in the knowledge management processes, especially with the development of information, communication technology, such as internet, intranet, and web technology, etc. IT is fast and efficient for acquiring, storing, and using explicit knowledge. However, technology has its limit in acquiring and sharing tacit knowledge. Therefore, different types of knowledge have to be approached in a different way in organizations.

Zack (1999b) believes that the management of explicit knowledge requires four primary resources: repositories, knowledge processes, CKO, and knowledge workers, and IT; at the same time, he segments knowledge processing into two broad classes of IT application tools: integrative and interactive (see Table 2.8).

Table 2.8: A comparison of IT Applications in Knowledge Management

Types of IT	Integrative Application		Interactive Applicative	
Types of Technology	Electronic Publishing	Integrated Knowledge Base	Distributed Learning	Forum
Producer and Consumer	Multiple	Ad hoc	Multiple	Ad hoc
Interface	People vs. Computer		People vs. People(IT as media)	
Content	Stable, few updates		Lots of updates	
Consumer Feedback	Less active feedback		High rate of feedback	
Types of supporting Knowledge	Explicit Knowledge > tacit knowledge		Tacit knowledge > explicit knowledge	
Roles of Database	Main role		Supporting role	
Modes of Storage	Database		Forum, Database	

Source: Summarized from Zack (1999b)

These two applications support and complement each other: the characteristic of the integrative application is that knowledge producers and consumers interact with the repository rather than with each other directly. The repository becomes the primary medium for knowledge exchange, providing a place for members of a knowledge community to contribute their knowledge. The primary focus tends to be on the repository building and the content it contains. Electronic publishing is one example of such integrative applications. What the integrative repository refers to is the tools used to integrate and utilize organizational knowledge, a best-practices database is the most common example of this type of application; on the other hand, the characteristic of interactive applications is that it tends to focus primary on supporting interaction among those people with tacit knowledge, the repository is a by-product of interaction and

collaboration rather than the primary focus of the application. Its content is dynamic and emergent. Distributed learning and forum are two of the most common examples of this type of applications.

In addition, according to Zhang (1990) , in knowledge acquisition activity, IT has four functions: searching, processing, transmitting, and storing; in knowledge creation activity, IT has five functions: processing, transmitting, storing, communicating, and analyzing and diagnosing; in knowledge accumulation activity, IT has four functions: searching, processing, transmitting, and storing; in knowledge transfer activity, IT has five functions: searching, processing, transmitting, storing, and communicating.

In general, most of the science and technology experts and companies offer a variety of setup schemes for knowledge management infrastructure. Each scheme has its own focus and its unique function. There is no good or bad in absolute terms. Given the technology that is available in the market, the problem is actually one of selecting an appropriate one that satisfies the need of the organization, for example, building up a generic knowledge management system and knowledge platform (see Table 2.9). In other words, the knowledge management system in each organization is different, however the difference is, and most of them are based on link (i.e. to LAN, WAN or Internet or email), knowledge repository (i.e. intranet, people index database, data warehouse, data exchange center, data management scheme), IT tools for searching locations (i.e. browser, soft ware, sorting and extracting card, knowledge map), and learning tools (i.e. long distance application tools), to set up, search and diffuse the tools to help organization and its members store and retrieve the information that has been acquired within and outside the organization for the benefit of business development.

Table 2.9: IT Functions and Classifications for Knowledge Platform.

Functions	Tools or Technical Terms
Searching	Data Mining, Knowledge Discovery, Intelligent Proxy, Visualized Modules, Full-Text Indexing Systems, Searching Engine, Lotus Notes, Intranet, Enterprise Regional Networks, Indexing Interfaces.
Filtering and processing	Intelligent Agent, Expert Systems, Neural Networks, Fuzzy Logic, generic Algorithms, grapevine, Indexing Software, Word Editing Software (Word, Excel, Spreadsheets), Presentation Software, Photo Processing Software, Video and Audio Processing Software, Electronic Calendars/Organizers, Supporting Decision Making Tools (Executive Information Systems, Business Intelligence, Decision Support Tools), Case-Based Reasoning.
Transmitting	Email Systems (Outlook), E-Mail, FTP, BBS, Network Chatting Software, Intranet, Enterprise Regional Networks, Groupware, Long-distance Teaching systems, Internet Teaching Systems, Virtual Places.
Storing	Knowledge repository, Knowledge Map, Electronic Library, Document Management Systems.
Creating	Computer Aided Design systems, Virtual Places, Work Stations.
Communicating and sharing	NetMeeting, E-Mail, BBS, FTP, Network Chatting Software, Electronic Bulleting, Groupware, Work stations, Discussion Column, Intranets.
Analyzing and Diagnosing	Expert systems, Neural Intelligent Agent Systems, Decision Support Systems, warning Systems.

Source: Summarized from Zhang (1990) and Li *et al*, 2000).

Therefore, the most useful function of IT for knowledge management lies in expanding the scope of knowledge dissemination, enhancing the speed of transfer, and extracting the knowledge out of the complex structured and non-structured knowledge for the benefit of reuse by members of organization, bringing the knowledge into the fullest play.

2.8 Enabling Factors for Knowledge Management–Strategic Management Perspective

Strategic management perspective for knowledge management refers to the strategies and methods that facilitate and support knowledge management activities, in which fulfilling learning organization (Senge, 1990), establishing Chief Knowledge Officer (CKO) (Earl

and Scoot, 1999), and building CoP (Wenger, 2000) are the three main themes that are valued most by experts and researchers in the field. Its main purpose is to offer a clear vision, fulfillment of knowledge management system, cultivation of knowledge workers, and motivations and incentives for members of organization.

2.8.1 Fulfillment of Learning Organization

The shift of concepts from organizational learning to learning organization primarily lies in the fact that organization has been regarded as the subject of learning in the form of individual member and group in order to promote sustainable development of the organization and increase its productivity and competitiveness by learning. There are already an immense number of books, journal articles, and research papers about learning; however, it has been increasingly changing fast with the advent of knowledge economy though it has its own place in history. One of the aims of knowledge management is to transform organization into learning organization, and the meaning in knowledge management activities is also often emphasized by learning. It also can be noticed that knowledge management is based on organizational learning and learning organization. A positive environment for organizational learning facilitates carrying out knowledge management (Koenig and Srikantiah, 2000).

Watkins and Marsick (1993), starting from the point of human resource development, believe that learning organization is one that learns continuously, that learning begins from individual, team, organization and communities that interact between organizations, that learning is a persisting and strategy-applying process, and combined with works. The results of learning lead to change of knowledge, faiths and behaviors, and to strengthen the ability of innovation and growth. In other words, human resource development is the driving force behind organizational learning. Therefore, Calvert *et al*, (1994) have identified the feature of learning organization as follows: (1) to use learning to achieve goals; (2) to use learning to help people value the effects of their learning on their organizations; (3) to avoid making the same mistakes again (and again); (4) to share

information in ways that prompt appropriate action; (5) to link individual performance with organizational performance; (6) to tie rewards to key measures of performance; (7) to take in a lot of environmental information at all times; (8) to create structures and procedures that support learning process; (9) to foster ongoing and orderly dialogue; (10) to make it safe for people to share openly and take risks.

Drawing from the studies on “theory of knowledge creation” by Nonaka and Takauchi (1995) and “organizational learning framework” by Crossan *et al* (1999), it is found that the theoretical concepts put forward by both sides are largely identical but with minor differences, in which the process of organizational learning begins at the application of intuitive metaphor, then, through interpreting and integrating, finally, through means of institutionalizing to have a feedback impact on other processes.

Nevis *et al*, (1995), linking learning to knowledge, believe that there are three stages in an organizational learning process: (1) knowledge acquisition: the development or creation of skills, insights, relationships; (2) knowledge sharing: the dissemination of what has been learned (knowledge transfer); (3) knowledge utilization: the integration of learning so it is broadly available and can be generalized to new situations. They also found in their early research that organizational learning does not always occur in the linear fashion implied by any stage model. Learning may take place in planned or informal, often unintended, ways. Only through socialization and utilization can knowledge and skills be acquired (Allee, 1997).

Botkin (1999) believes that most of organizations adopt a model of continuous “maintenance learning,” (survival learning by Senge) rather than “innovative learning”. Innovative learning transitorily occurs only when affected by external shocks and stimuli. Maintenance learning refers to situations that are known and repeatedly occurring, and rooted perspectives, methods, and rules that have been learned. It enhances the ability of organizations to solve the problems that have been known and it is indispensable in terms of stability of organizations, however, it does not bring about prosperity to organizations.

It is only instrumental learning, in which members of organizations are only expected to modify their strategies and means for action to achieve organizational objectives, rather than involve the issue of value behind the action, it is called “single-loop learning” by Argyris and Schön (1978) and “adaptive learning” by Senge (1990). In order to adapt to the vehement challenges of the environment, organizations need another learning model: “innovative learning,” which can renew, regenerate, and change the problems. It is a process through which joint efforts are made to face the unprecedented situations. In this case, members of organizations not only modify their strategies and means for actions, but also further question the organizational objectives and norms and make necessary adjustment accordingly in order to adapt to the new situations. It is called “double-loop learning” by Argyris and Schön (1978), “generative learning” by Senge (1990) because it enhances the capacity of organization to create, not only to transform, rather it is a lasting converting learning. People who share knowledge and learn in organizations can create new knowledge and innovate and thus creativity can be inspired.

Zohar (1991) points out that human creativity is extremely similar to the process of quantum physics, in which human brain can think in three totally different modes: continuous, relational, and integrative.

The first type of thinking, represented in a rational, logic, and norm-binding manner, similar to Newtonian ‘particles paradigm,’ is linear and determinist ways of thinking. Most of the traditional organizations think in this manner: normally what is done in the analysis stage is that an situation is analyzed to the basic units and then the causal relationships to occur are predicted; when strategies are worked out, a set of rules of game are also made, and then implemented and justified one step followed by another. Of course, this leads to the natural development of a range of systems such as man-hour, punching card, working rules, uniform requirement, and hierarchical control, standard operating procedures, which are typically embodied in organizational strategic planning or management of objectives. This type of thinking is based on the notion that an organization is composed of different units, and behaviors are predicted by control. The

advantages are fast, accurate, and reliable; while the disadvantages are that it can only be operated within the given paradigm, procedures and rules, lacking the flexibility to deal with external environmental change.

The second type of thinking is relational, out of habit, analogous to Newton's 'wave paradigm', adopting 'relational thinking' (or lateral thinking). It is an experiential and horizontal way of thinking. Much of the knowledge in the organization remains as tacit knowledge that is at the heart of the organization. It links body and mind and resides in the know-how and experience of the organizational members. All relational thinking is based on learning process of trial and error and often is dialogue of experience, an experiential learning of continuous construct and indescribable tacit learning. The advantages of this type of thinking are that it can deal with the remote problem of fuzzy discrepancy, while the disadvantages are that it is constrained by habits and features, which leads to low speed and accuracy and difficulty to share.

The third type of thinking is creative intuitive, rule-breaking and new-rule building, analogous to 'quantum physics paradigm', adopting 'integrative thinking'. It is holistic and leap-forward way of thinking, which is the right spirit of innovation that is emphasized by knowledge management. It is a process of synthesizing continuous and relational ways of thinking, allowing us to challenge given rules and change habits depending on the situation as a whole. Information technology can simulate continuous and relational ways of thinking, for instance, personal computer and artificial intelligent, however, it cannot carry out creative thinking rich in creativity. This is because information technology is operating in assumptions, habits and mental models, it cannot operate without rules and formula, therefore it is a game with limited scope; conversely, quantum physical thinking allows flexible objectives, challenges given assumptions and rules, remakes rules and breaks them. Therefore, it is a game with infinite scope.

Therefore, Newton's physics paradigm is a great breakthrough to continuous thinking, characterized by distinct logics, rational thinking and observance of rules. It falls into the

rigid mode of Western management, represented by the school of Scientific Management; whereas Einstein's physics paradigm is a significant breakthrough to the relational thinking, characterized by networking, interrelatedness and observance of habits. It falls into the supple mode of Oriental management, represented by the school of Human Relation. These two ways of thinking allow us to achieve civilization in science and technology and to control Nature. Yet only we transcend the existing methods and ways of thinking when facing newer environmental challenges can we acquire the innovative ideas, and then can 'integrative thinking', similar to quantum physics, grow up by reorganizing the knowledge in the heads of organizational members, innovative ability to act can be further exhibited by generating creative and intuitive thinking.

How to create the concept of innovative learning? Attention should be paid to the following aspects: (1) forward learning: focus on future and use intuition and imagination in observations; (2) participative learning: the attitude that consists of collaboration, dialogue, and empathy, it should not remain only at the level of formal sharing of decision making, but also include that communication channels are kept diverse and open, in which individual operating principles and worldview of value are tested; (3) multiple learning: learn diversely different skills to cope with the unexpected situations that may arise; (4) system thinking: a way of seeing the forest and the trees as a whole (Senge, 1990); (5) note that the worst enemy is complacency and arrogance; (6) life-time learning: self-oriented continuous learning, individuals are willing to learn on their own initiatives, and become an integral part of organizational culture that share value and faith (Schein, 1985); (7) mutual learning: learn best practices from within and outside the organization; (8) teaming learning: learn in the community of practice and enhance dialogues between members (Senge, 1990); (9) build a shared vision; (10) learn from past experiences and history.

If the above-mentioned aspects are positively fulfilled in the process of organizational learning, the achievement by individual learning can be embedded in the organizational memory and structure, and readily available for use by members of the organization at

any time. In the meantime, problems-solving capacity of the organization as a whole can also be enhanced by utilizing knowledge agilely at the individual level. In other words, to achieve organizational innovation, subsystems such as learning, organization, human resource, knowledge, and technology must be integrated to achieve the development of the organization through creation of knowledge, analysis of topics, participation of action, and problem-solving model.

Therefore, the change of members of the organization to integrative thinking and life-time learning must be done because that is the most fundamental motor to organization's development. Only do individuals and organizations constantly challenge the rigid ideas and practices and move away from existing paradigms, can originality be generated incessantly, by which human self-breakthrough can be realized.

2.8.2 Establishment of Chief Knowledge Officer

Earl and Scott (1999) suggest that appointing a CKO may be a good place to start when embarking on a knowledge management program. It is learned and known from the past experiences that leader is one of the key factors to the success or failure (Crawford, 2005; Singh, 2008) in the process of a reform promoted by an organization. It is a well-known fact that there is very little chance of success if implementing a program is without all-out promotion and monitoring by a leader in charge. There is no exception for those organizations that want to promote knowledge management in the knowledge economy of today. Therefore, there must be someone who is responsible for the whole operation of knowledge management in an organization. CKO refers to a senior executive, in an organization, who assumes overall responsibility of the whole knowledge management strategies and systems, and develops and manages knowledge management strategies (promoter), while working out agenda to implement knowledge management (executants), and coordinating among units and motivates knowledge workers to share information and knowledge. In general, CKO is charged with taking the knowledge management concept from theory to practice. It is imperative not only for CKO to understand missions and

visions of the organization, but have the ability to lead so that different units and personnel can be coordinated and knowledge be transformed into resource readily available for use. Knowledge management has been described as 20 percent technology and 80 percent cultural change, therefore, CKO must take into account both technology and social, cultural, and environmental conditions when designing an investment project. In short, the ultimate goal for CKO is to be able to enduringly apply knowledge management to day-to-day work in the organization, and make an effective use of the knowledge possessed by the organization to create competitiveness and value.

CKO as a new position has been developed with the rise of knowledge management. There is no such a position whatsoever in the traditional sense of job description. As a result, there are ambiguities involved in terms of the role and position of CKO. Some of the views of researchers and practitioners on this subject are discussed below.

Earl and Scott (1999) also believe that CKO has to deal with four types of people in the organization: (1) knowledge champions, who are excited about a particular knowledge management idea or project and thus have identified where improvement is possible and are likely to try something new, are the mass base for knowledge management; (2) knowledge sponsors, who are identified from the senior executive cadre those who are enthused by knowledge management, identified with the concept, and made public statements about it, and most importantly who will involve in and support knowledge management projects in time of need, are the backbone of knowledge management; (3) knowledge partners, who are the senior executives in the organization such as Chief Financial Officer (CFO), Chief Auditing Officer (CAO), and Chief Information Officer (CIO), are the allies for knowledge management because any knowledge management program initiated by CKO is unlikely to be implemented and accomplished without the cooperation and collaboration of these senior executive; (4) knowledge skeptics, who are hostile to knowledge management and/or the appointment of a CKO and sense that there will be doubters and reactionaries who must be converted to the cause or avoided for now, are those majority of people in the lower organizational hierarchy.

Victoria Ward (1998) has identified four roles as a CKO in a knowledge organization: (1) cartographer: mapping expertise and making connections; (2) geologist: drilling into specific areas and applying tools; (3) sparkplug: igniting an awareness of the need to change; (4) architect: designing the physical and cultural environment (Abell and Oxbrow, 1999).

Earl and Scott (1999) further have identified four roles that CKO can play: (1) technologist: the CKO has to understand which technologies can contribute to capturing, storing, exploring, and, in part, sharing knowledge. Thus, the CKO has to be sufficiently informed about technology to evaluate what works, to judge when to adopt a technology, to appreciate the opportunities enabled, and to assess any demanding implementation issues. In a word, the CKO as a technologist has to build hard-ware facilities for knowledge management; (2) environmentalist: in contrast to the role of technologist, these aspects require much “softer” competencies, which includes the design and creation of a kind of environment that inspires and enhances the opportunities, whether planned or unplanned, of communications among staff, in which staff can easily exchange and share knowledge, and innovate. More fundamentally, being an environmentalist means making close connection to any management education and organizational development initiatives that increase the emphasis on, and enhance capacities for, knowledge creation, and knowledge exchange and inspiration of originality; (3) entrepreneur: most of Chief Knowledge Officers possess the qualities of entrepreneurship. They are excited by business development and by growing something, and see themselves as builders, starting a new activity, capability, or function. The CKO, to a degree, is a strategist who can grapple with the implications of using knowledge management as a tool for organizational transformation, not only is able to think of a new way of doing things, but also to focus on deliverable results. In short, the CKO has to have the spirit of newness, adventure and risk taking, to be able to translate organizational visions into action, and to achieve them in the most effective manners; (4) consultant: being a consultant or integrationist, the CKO has to bring in ideas and seed them and listen to other people’s

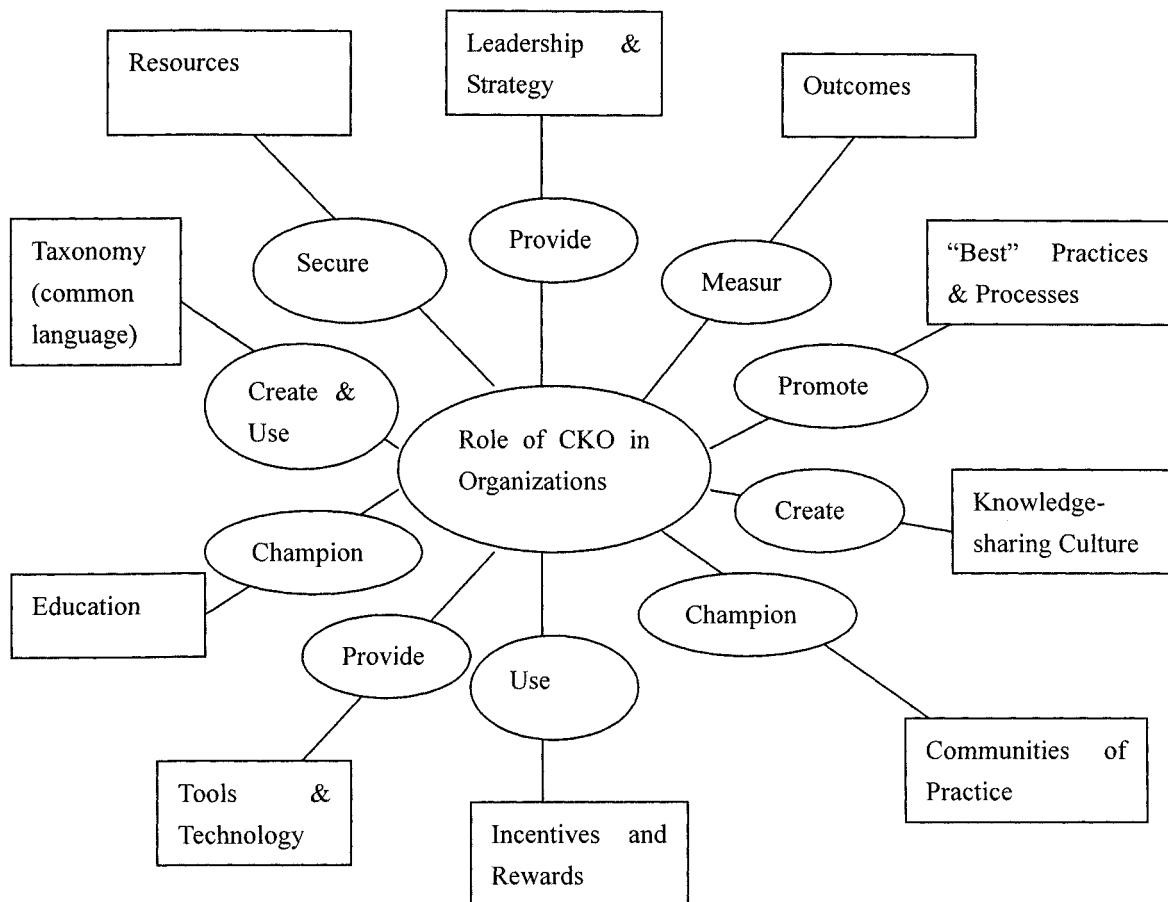
ideas and back them if they make sense and fit the knowledge vision, and try to match new ideas with business needs of the organization. At the same time, he or she has to be able to gain the acceptance of new ideas by the organization. In order to do this, the CKO has to be able to know the organization's culture well, to read the needs for change and understand the organization's business model and is clear about the kind of knowledge that is relevant and will create value. Unless this is done, there will not be smooth transition in the process of change within the organization and the ultimate goal to increase organizational competitiveness will not be achieved.

Looking at the role of CKO identified respectively by Ward, and Earl and Scott, what they have said actually is different in approach but equally satisfactory in result. Cartographer is just like entrepreneur; geologist is just like technologist; sparkplug is like consultant; architect is just like environmentalist.

Davenport and Prusak (1998) also suggest that the CKO in an organization must: (1) advocate or evangelize for knowledge and learning from work; (2) design, implement, and oversee a firm's knowledge infrastructure, including its libraries, knowledge bases, human and computer knowledge networks, research centers, and knowledge-oriented organizational structure; (3) manage relationships with external providers of information and knowledge, and negotiate contracts with them; (4) provide critical input to the process of knowledge creation and use around the firm such as product development, and facilitate efforts to improve such processes; (5) design and implement a firm's knowledge architectures; (6) measure and manage the value of knowledge, either by conventional financial analysis or by "anecdote management;" (7) manage the organization's professional knowledge managers, giving them a sense of community, establishing professional standard, and managing their career; (8) lead the development of knowledge strategy, focusing the firm's resources on the type of knowledge it needs to manage most, and the knowledge processes with the largest gaps between need and current capability (Liebowitz and Beckman, 1999).

It is believed in this research that several perspectives identified by Neilson (2000) can be used to summarize the roles and work of CKO (see Figure 2.13) in the following section.

Figure 2.13: Roles and Works of CKO



Source: Nelson (2000)

1. Provide leadership and strategy: create and sell knowledge management vision, help "CEO" drive the organization in the desired direction, communicate commitment to and strategy for knowledge management to stakeholders and players, lead by example, light fires and implement pilots using knowledge management tools and technologies, act as a liaison with other federal agencies and industry partner to facilitate the sharing of world-class knowledge practices, act as a transformation agent – from industrial age thinking to information age thinking, develop strategies to make tacit knowledge explicit, provide guidance and policy on processes to "institutionalize"

knowledge management practices, engage in “hand-to-hand” combat with CFO, CAO, CIO, Chief Learning Officer (CLO), and ability to translate qualitative into quantitative.

2. Measure outcomes: contribute to mission goals or bottom line, evaluate the effectiveness of knowledge management projects and contribution to mission, benchmark with other organizations (public and private), convert intellectual capital to structural, and reduce operating costs and products or services.
3. Promote “best” practices and processes: provide infrastructure and incentives for knowledge re-use and innovation, provide a means to benchmark the performance of individuals and teams.
4. Create knowledge-sharing culture: promote an organizational culture that facilitates tacit and explicit knowledge sharing and organizational learning, and foster cultural change.
5. Champion communities of practice: champion cross-organizational CoP, form relationships with related leaders: human resources, organizational learning, IT, and librarians.
6. Use incentives and rewards: develop incentives to encourage knowledge sharing – “one size does not fit all”, recognize and promote knowledge contributors who share knowledge across the enterprise.
7. Provide tools and technology: keep up-t-date on emerging IT tools and techniques, share information about knowledge management tools and search for enterprise-wide licensing opportunities for knowledge management tools, ensure knowledge management project staff.
8. Champion education: educate leadership and employees about knowledge management and its benefits, define roles, skill-sets, and career opportunities of knowledge workers, and develop a strategy to facilitate training and education of knowledge workers. In addition, Henschel (2001) believes that, in order for a CoP to function normally, the CKO has to shift the emphasis from education and training to leading and tutoring, target at continuous learning, and allow the new concepts and renovation activities to be “naturally diffused” to the organization, rather than

“transmitted” in the traditional sense.

9. Create and use taxonomy (common language): develop common definitions to facilitate understanding of knowledge concepts, and champion the development of taxonomy to classify and store explicit information in formats that are easily assessed and used.
10. Secure resources: champion development of knowledge management budget and advocate keeping knowledge management resources available, and provide resources to those who are eager to experiment with knowledge management in their respective components.

2.8.3 Establishment of Communities of Practice

Before CoP are discussed, the relationship among CoP, team, and group must be clarified first: “group” implies numbers, representing the numbers of people, and has nothing to do with how it is represented; “team” implies some expectations of group behaviors, including common goal, coordination, cooperation, communication and aspiration; CoP differs in that learning and interests shared by members become the cause that shapes CoP. The definition of CoP originates from “knowledge” rather than from the task; the very existence of CoP is because of the “participation” of members of communities that brings in the value; the life cycle of CoP is determined by the value that it can offer to the members, it does not have a time-table like that in a team, and neither does it come forth when a project is started, nor will it go away when a task is finished. In short, the relationships between them can vary and develop a hierarchy depending on the different meanings and levels that are required. In addition, Wenger and Snyder (2000) have made a snapshot comparison of the terms such as CoP, formal work group (Williams, 2008), project team, and informal network.

Jim Botkin (1999) has defined CoPs as a group of people with a shared passion to create, use, and share new knowledge for tangible business purpose. Successful CoPs, because of shared view of value and commitment, and common language, develop a sense of

belongings which glues them closely together. People in the same communities tend to trust each other, and willing to open their mind and brainstorm with one another, without having to worry about being laughed at when something unrealistic is said. Therefore, CoPs refer to the groups that create and share knowledge together through an interactive mechanism, such as discussion column, message board, chat room, and bullet boards. Through CoPs, it allows those people who have the same professional background or expertise to develop interaction, build mutual trust, and create and share knowledge together. In so doing, not only is individual knowledge of employee advanced, but organizational competitive advantage is also enhanced. A whole CoPs should include both physical and virtual communities: physical CoPs can be identified with those people who are across units but within the same knowledge domain or professional background through activities such as specialty surveys, seminars, knowledge appraisal; virtual CoPs provide those people who share the same knowledge background or knowledge expertise a space, in which individual tacit knowledge can be free flowing.

McDermott (1999) suggests that the most natural way to leverage knowledge is to build communities that cross teams, disciplines, time, space, and business units, and four key challenges should be considered in building these communities. First, the technical challenge is to design human and information systems that not only make information available, but help community members think together; second, the social challenge is to develop communities that share knowledge and still maintain enough diversity of thought to encourage thinking rather than sophisticated copying; third, the management challenge is to create an environment that truly values sharing knowledge; finally, the personal challenge is to be open to the ideas of others, willing to share ideas and to maintain a thirst for new knowledge.

Storck and Hill (2000) feel that “strategic communities” are an important way to disseminate organizational knowledge. The value that strategic communities can contribute to the organization lies in that high quality of knowledge creation is ensured, situations that the unexpected and modification might happen to the plan is reduced, the

ability to solve the non-structured problems is enhanced, knowledge-sharing between business and functional units is made more effective, possibility of realizing common goals is increased, and individual development and learning are also become effective. Six key principles that are critical to the success of strategic communities were identified by Storck and Hill (2000) with their validated experience: (1) design an interaction format: arrange routine face-to-face meetings, promote open dialogues, and allow serendipity; (2) build upon a common organizational culture: use a common training, experience and vocabulary to reinforce a strong sense of organizational culture among members; (3) demonstrate the existence of mutual interests: consciously by moving toward achievement of common goals to make commitment among members, and encourage to use and refine the processes that the community develops. (4) individual and collective learning: teaching and learning complement one another, hence make use of knowledge and experience owned by respected peers to build an environment that facilitates learning; (5) embed knowledge-sharing into practices: embed knowledge-sharing into the work processes, and reinforce valuable knowledge through immediate feedbacks; (6) establish an environment in which knowledge sharing is based on processes and cultural norms defined by the community rather than other parts of the organization: allow “zone of safety” for candidness to be established in order to build trust and recognition of community, and minimum link to formal control structure and encourage autonomy to operate outside the structure. In addition, Botkin (1999) suggests the following principles in building a community of practice: (1) locate community in action; (2) allow those who are showing initiative and possessing first-class interpersonal skills to lead and manage CoP; (3) clearly target at innovation; (4) focus on cooperation and collaboration; (5) foster cheer-team outside CoP; (6) frequently communicate and share; (7) take a broad view and act pragmatically; (8) recognize the value of people.

All in all, the purpose for establish a CoP is to allow members of an organization and managers to become true knowledge workers and knowledge managers, and move toward and achieve the goal of knowledge organization at an early date.

2.9 Enabling Factors for Knowledge Management – Organizational Culture Perspective

Organizational culture perspective for knowledge management refers to those cultures that embed in deep inside an organization which facilitate and support knowledge management activities, including openness, sharing, trust and learning. Organizational culture provides an open environment (Al-Alawi *et al*, 2007), in which members of organization are willing to learn, trust each other, have the courage to innovate, take initiative to share, and accept errors in order to remove three obstacles to knowledge conversion between explicit and tacit knowledge: knowledge monopoly, lack of trust, and egoism (Botkin, 1999).

Schein (1985) has defined organizational culture as a pattern of basic assumption – invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems. Therefore, organizational culture refers to the shared views, beliefs, and practices, which is rooted in the core value, and reflected on various aspects such as missions, values, and philosophies, of the organization. In terms of organization, the importance of organizational culture is self-evident, its tendency and style are determined by the organizational functions. IT is only a tool to build the infrastructure for knowledge management, it is not a panacea; IT only provides a framework, rather than content; IT only makes knowledge management possible, and knowledge management can never be achieved by IT itself. Human factor is the key in determining whether knowledge management can create value for the organization. As emphasized by many experts, knowledge management concerns 90 percent of social meaning, fundamentally based on human beings; it is through people that information is filtered, synthesized, epitomized to help people obtain the information required and take actions, rather than rely only on infrastructure such as technology and computer. Consequently, successful knowledge management has to be achieved through

change of organizational culture so that mental models of employee can also be changed (Luen and AL-Wanamdeh, 2001). Unless organizational culture is changed, no knowledge management initiative will succeed.

Organizational (or national) culture may be defined as the set of values, beliefs, attitudes, aptitudes, ideas, aspirations, rationalities, norms and expectations, as well as practices, common to all or to the great majority of the members in an organization (or country). Culture is tightly connected to members of the organization (or country), embedded in the way they act, what they expect of each other and how they make sense of each other's actions. The culture guides the members' day-to-day working relationships and determines what kind of behavior is acceptable and what is not, and how power and status are allocated. Often, it is not only unarticulated, but also taken-for-granted and invisible to members of the organization (or country). According to this culture definition, it is impossible to find out two organizations (or countries) that have exactly the same culture.

Among those themes required by organizational culture, it is believed in this research that innovation and learning are related to learning organization which has been discussed in the proceeding section, and not to be repeated here. Focus of discussion is placed on acceptance of error, trust, and sharing in this section.

2.9.1 Acceptance of Error

Argyris and Schön (1978) feel that organizational learning is a process of detecting and correcting error. Too many managers in the organization only know that the employees are to be blamed for the error that has been made. By so doing, it will only break the learning cycle, shut down the heart of employee, fear of attempt to innovation. As a result, it often makes even a smart person become a worst learner. This reflects the fact that in the traditional sense employees tend to choose to do things that success are ensured, which has become the main obstacle to enhancing organizational competitiveness. Hence, while innovation is encouraged, space for acceptance of failure targeted originally at

innovation must be given to allow freedom for employees to question openly and promote new ideas.

2.9.2 Trust

According to Bartlett and Ghoshal (2000), trust is involved in the culture of every organization that has taken knowledge transfer and organizational learning as a major competitive advantage (Yang, 2007). Trust is erasing suspicions among members within the organization, enables members to offer their genuine self-devotion, true care, and understanding each other. Carnevale (1995) feels that low trust in the organization can create an obstacle to learning, because lack of trust can lead to the instance that self-closure occurs and even trigger defensive behaviors, which are cyclic in essence.

Organizational work policies represent the degree that an employee is trusted. In the instance of low trust, fear is filled throughout the workplace; when employees feel they are not trusted, a sense of self-efficiency will be removed and further feel insecure; as a result, employees in turn take a defensive attitude and retaliate (respond) with distrust; under the circumstances, individual as well as organizational learning are stifled, because important feedback about work experience cannot be handled; while the organization may see these as representation of low ability of self-management, which are further annotated (interpreted) as low commitment, thus control is strengthened (tightened), resulting in the repetition of cycle of low trust.

Carnevale (1995) also sense that when people trust others, they tend to be more willing to place themselves in a much more vulnerable position and to take the risk that their dependency will not be exploited. They tend to allow more harm to be done to him and are willing to take the risks in case that others may have done harm to him; and at the same time he gives up the desire to control other's behaviors, thus is greatly influenced by others. The developments of harm and risks that are assumed enable requisite communication and information even more open, and people tend to be willing to expose

themselves to more issues concerning correlation, accurate and complete data, and their own thoughts and emotions, by which they can modify their views of events or adjust their behaviors and that learning is achieved. The foundation of organizational learning starts building when individual and group engage in the activities. In organizations, there are three important factors that affect culture of trust: first, the transparency and openness of organizational processes; second, equity and balance of management decision-making processes; finally, a set of shared core value established within the organization. Therefore, organizations have to strive for outcome, performance comes before opportunity, intellect represents profit, profit means outcome. People tend to leave or start all over again and become a competitor if a set of objectively equitable performance appraisal systems is unavailable to measure individual achievements.

2.9.3 Knowledge Sharing

Members tend to take it for granted that their ideas, experience and insights are shared rather than forced in an organization that possesses a knowledge-sharing culture. Of course, people also expect and assume that other members would share knowledge. Knowledge sharing means a notion that resources are shared and collective creativity is more than the sum of individual independent work, which is the embodiment of altruism in practice. Its premise lies in the egoless attitude of contribution to achieve the purpose of learning and innovation by the process of exchanging practical experience among members of knowledge communities, through which individual knowledge is increased and becomes intellectual capital of the organization. In fact, Argyris and Schön (1978) pointed out that organizational learning occurs when organization members play the role of learning agent, by detecting and correcting error in theories-in-use, response to change in the environment inside and outside the organization, and incorporate those results from the studies into cognitive imago of the individual and shared organizational chart. Therefore, members of CoP tend to individually or collectively detect and correct error, adjust and adapt to changes, and incorporate those results from research and learning into organizational memory, and improve them constantly to achieve the purpose of learning

and sharing (Yang, 2007).

Coleman (1999) considers the key factors to knowledge sharing as trust, the ability to communicate clearly and with enough bandwidth to transfer meaning, a common context and language, a reason or goal for sharing, the space to think and reflect, the ability to interact with others in a non-purposeful way, the autonomy to share, awareness that knowledge is local and sticky and often does not transfer easily, a flexible organizational structure that supports knowledge sharing (a rigid command and control structure does not support knowledge sharing), the infrastructure to support knowledge and information sharing. In addition, Bolman and Deal (1991) think that members must possess skills to sponsor and inquire to enable exchange to obtain maximum effect. Sponsoring means to convey what an individual thinks, knows, desires or feels by representation; exploring means to exhibit and understand behaviors that others think, know, desire or feel. In a word, sponsoring emphasizes on making a claim, while exploring focus on listening, understanding other members' opinions. To enable organizational learning and to detect and correct "theories-in-use" in the organization, organization members must openly test, compare, and modify their norms and assumptions (similar to the task of changing mental model) that held by others in an environment and climate in which people are trusted each another and communication is carried out in a two-way manner.

Basically, knowledge sharing is not a self-developing process, but there must be a formal base for culture to grow. Therefore, it is imperative for an organization, through all kinds of systems and paths, to encourage exchange of experience, build up trust and collaboration, and reshape personal relationships. The key to create such an environment in which employees are encouraged to sharing knowledge is to foster interactive learning, by which critical investment on human potentials can be nurtured and released, and much of tacit knowledge that must be acquired only through interactive learning and cooperation and communication by internal and external experts who possess them also can be stored and retrieved. For instance, technologies such as people index database, electronic address books, and e-mail can be used to guide sharing process. Sveiby (1997)

also suggests using an approach to create space for sharing knowledge, by giving ten-minute time every morning and afternoon for employees to think, encouraging them to sit down and relax, and have some time to rest for ideas. He also encourages designing a place with natural light in the office for creativity to seed. In some organizations, tea room is set up to encourage employees to sit down and have a cup of tea while talking about plans with colleagues, thus knowledge is shared in the process of socialization. Of course, such a space may also be a virtual one; in some organizations virtual retiring room is created for publishing jokes, auction notices, recipes, and birthday parties, and even for activities such as cocktail party, reception, and breakfast and dinner parties, by which interactions among colleagues are enhanced, communities of practice for knowledge flow and sharing are favored, a culture of “organization as an organic whole” is shaped. However, understanding individual experience in the past by employee is not enough, in the world of today, individual contribution to the organization lies in whether he or she, in collaboration with others, can create new knowledge, integrate existing information and data, and experience a soul that collective creation is more than the sum of each individual work. Once such a culture is established, it is only very natural for employees to take care of organizational interest as a whole rather than individual or unit interest as a part.

Discussing the relationships among openness, trust (Renzl *et al*, 2005; Scott *et al*, 2005), sharing, learning, innovation (Aramburu *et al*, 2006), equity, and acceptance of error reveals a kind of relationship just like the one between water and fishes. Only in an open and equitable organizational environment where members have no worries or fear of making forgivable errors, can they set their heart at rest and have the courage to bring forward new ideas, and can there be possible for them to share their prime tacit knowledge with others, of course with their name attached to the shared knowledge as a form of recognition, and possibly with some appropriate forms of compensations and rewards based on the principle of reciprocity. In this manner, a network cycle of each elements of culture can thus be developed for a knowledge organization, in which organizational culture is fulfilled; organizational knowledge are created and renewed

continuously.

2.10 Chapter Summary

This chapter has reviewed why private companies are engaging in knowledge management and how they have been managing knowledge to gain competitive advantages. Existing literature suggests that management of knowledge is a very complicated social process. It involves variety of individual and organization behaviors and multi-disciplines and is influenced by different elements at different stages. Intensive studies have been carried out on in the Western companies. However, knowledge management theory has not been comprehensively developed in the private sector, let alone the public sector. It is recognized that public sector has lagged behind its counterpart. Research on knowledge management in the public sector has been neglected

Literature review in this chapter largely has focused on knowledge management process and important factors affecting knowledge management in the private sector. However, the present literature generated from empirical studies has not given greater attention to research on knowledge management in the public sector. By reviewing the literature in the private sector, it is hoped that it will lay a good foundation for the research on knowledge management in the public sector.

Chapter 3 Knowledge Management and the Public Sector

3.1 Introduction

The purpose of this chapter is to introduce the business of government and the concept of New Public Management (NPM) developed in the developed countries and spread in the developing countries, including China, and its implications on Chinese civil service reforms. The introduction to the concept of NPM is to establish the association of NPM with knowledge management rather than to deal with the specific issues of NPM reforms in depth. Then, also discussed are benefits, the review on knowledge management in the public sector. Finally, a knowledge management framework for the public sector is proposed and important factors are considered in the framework.

3.2 The Business of Government

According to Drucker (1994), every organization, whether a business or not, has a theory of the business, which consists of three parts. There are the assumptions about, first, the environment of the organization: society and its structure, the market, the customer, and technology; second, the specific mission of the organization; third, and the core competencies needed to accomplish the organization's mission. The theory of business fits the public organizations perfectly well as the private ones do and in principle is in alignment with that of KM (Cong *et al*, 2007). Government organizations generally have two major business to attend to, policy-making and service delivery to the public. The steps of policy-making process in government can be expressed in Figure 3.1. Knowledge as the fundamental resource assumes special importance in every step of the process of business of government (Cong *et al*, 2007).

While literature on knowledge management has been addressing issues, challenges and opportunities for the private sector, there is relatively little discussion about the public

sector. This study is trying to establish the link between NPM and knowledge management to see the association of NPM with knowledge management in a broader context of public management reforms in general and China in particular.

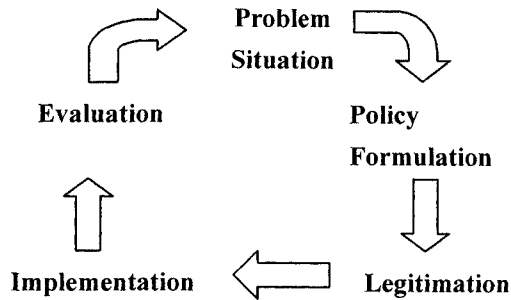


Figure 3.1: The Business of Government

Source: Edited from Heffron, 1989

3.3 New Public Management and Knowledge Management in the Public Sector

More than decades of development of NPM both theoretically and practically in Western world and its tendency to spread to the developing countries has paved the way and laid a solid foundation for knowledge management initiatives to be implemented in the public sector. To better understand the relevance between NPM and knowledge management, a brief introduction to NPM is deemed as necessary (Cong and Pandya, 2003).

3.3.1 New public management

NPM (Hood, 1991; Pollitt, 1990) offers a set of new ideas and tools for government to run the public sector. Its key idea is the employment of private law contracts in order to provide public services (Cong and Pandya, 2003). The theme of NPM has been widely discussed and issues and future development heatedly debated in the public management literature (Halligan, 2007; Hood and Peters, 2004; Groot and Budding, 2008)

There are divergent interpretations of NPM by different authors for different purposes of study. This author will look to the root and two distinctive confluent reforms: the US style of government reinvention and the UK style of NPM. Hood (1991) enumerated seven key NPM components: 'hands-on professional management' – active, visible management and control with clear responsibility and freedom to manage; explicit standards and measures of performance, clearly defined goals, targets and indicators of success; greater emphasis on output controls, resource allocation and rewards linked to measured performance; shift to disaggregation and decentralization, breaks up of 'monolithic' units, relationship between units on arm's length basis; move towards more competition and mixed provision, contracting relationships rivalry as the key to lowering costs; stress on private sector based models of management, greater flexibility in hiring and rewards, need to use 'proven' private sector tools; emphasis on greater economy in resources, cutting costs, raising productivity, resisting union demands, 'doing more with less'.

In Osborne and Gaebler's book: *Reinventing Government* (1992), they envisage ten images of future government: catalytic government: steering rather than rowing – essentially not assuming that if a service is needed it has to be provided by a public service organization, but, perhaps by any combination of public, private, voluntary or joint initiatives; community owned government: empowering rather than servicing – the role of public organizations and government is to create the right conditions for solving problems rather than necessarily doing it themselves, often with community involvement; competitive government: injecting competition into service delivery – competition may be intra-public or with a variety of alternative providers – it is not the ownership of the competitors but the fact of competition which is important; mission driven government: transforming rule-driven organizations – removing bureaucratic control by rule within public organization and replacing it with mission and value driven systems; results-oriented government: funding outcomes not inputs – traditional approaches to public services have been budget driven rather than focusing on outputs or outcomes;

customer-driven government: meeting the needs of the customer, not the bureaucracy-
listening to the need and wants of those receiving public services; enterprising
government: earning rather than spending – looking for opportunities for public
organizations to raise funds through selling services or by-products of its operations;
anticipatory government: prevention rather than cure – trying to identify present and
future causes of problems and dealing with them rather than the resulting problems
themselves; decentralizing government: from hierarchy to participation and teamwork –
promoting more flexible, less layered forms of organization; market oriented government:
leveraging change through the market – using a variety of means to try to redirect markets
to solve social problems. Osborne and Gaebler's images of government and their belief in
government "does not accord with the 'public bad – private good' ethos underpinning
much of the NPM thinking in the UK" (Tablet, 1994 p 11). But they indeed have many
things in common.

Decades of NPM reforms largely in the developed countries result in different
experiences, which present an interesting image of the current state of NPM reforms.
Many and major changes have been implemented, new topics are emerging from recent
NPM reforms and there is also a sense of movement along new pathways, such as system
integration of new elements and features and performance in the approach to NPM
reforms (Haglligan, 2007). The recent NPM reforms have certainly changed the way the
public sector operates and have become a permanent feature of public sector management.
The author argues that NPM reforms are part of long-term public management process
and new public management approaches and models will emerge in the process.
Knowledge management may be the approach to public management and has a role to
play in the public sector.

The practice and the development of NPM and its increasing acceptance by countries
around the globe show that the concept and practice of knowledge management stemming
from the private companies can be adopted in the public sector. However, its success or
failure will depend on how knowledge management is adapted to the context of the public

sector (Cong and Pandya, 2003). China will also be affected by the reform with the current globalization and the advanced information communication technology. But the adoption certainly has to fit the Chinese context.

3.3.2 The Chinese Public Sector Reforms

The People's Republic of China has been engaged in a major campaign to reform its economy for three decades. Most observers would agree that the effort to move the country from a command to a more open, market-oriented economy has been largely successful. However, administrative reforms (in disguised political reform) have lagged behind economic reforms. Economic reforms have created pressure for improved government performance by administrative structures at both the central and local levels. Modernizing the personnel system through the creation of a professional competent administrative corps has become one of the major components of the government's administrative reform efforts since the middle-1980s (Tong *et al.*, 1999).

China's economic reforms have received a great deal of attention in the Western press and scholarly literature. However, there is less knowledge about the efforts to implement administrative reforms. Although the leadership is reluctant to use the term 'political reforms', government reform such as the adoption of civil service system has important implications. It requires an overhaul of the whole bureaucratic system, changes in the relations between the Chinese Communist Party and the State, in the methods and criteria for recruitment and promotion, and in how the government performance will be evaluated, not only internally but also by the public. Even though many problems remain, the direction of the change is obvious: a more efficient and professionalized government bureaucracy in China. The case about early implementation of civil service reform in China needs continued commitment from the top political leadership as well as senior civil servants in the central government and local government bureaucracies (Tong *et al.*, 1999). However, Chinese administrative reforms are carried out with their own characteristics and often are renowned for reforms (both economic and political) with

Chinese characteristics.

3.3.3 Political Reform with Chinese Characteristics`

China's contemporary civil service exists in a particular context, shaped by the country's history and its value system, and by political, economic, social, and demographic factors. China's experience of a sophisticated civil service system, spanning many centuries, has had consequences for the contemporary period. It has prepared the nation for rule by generalist, chosen at least in part for their demonstrated ability. It has reinforced popular notions of distance between rulers and the ruled, and on the importance of personal relations (*guanxi*) to bridge the gap.

Several factors have shaped Chinese civil service management, environment and context. First, the Chinese Communist Party's road to power through revolution has shaped the course of civil service management, which had a further consequence for civil service management. Second, China's more recent political history has also shaped the civil service environment and elite values have also shaped the context of civil service management. Finally, Marxism has guided China's leaders to experiment with socialism as economic development strategy.

China's socialist economy is for the most part centrally planned and reliant upon administrative mechanisms to allocate labor and determine wage levels. The civil service is staffed and paid according to national labor allocation and wage plans without any market mechanisms to guide civil service managers in these areas.

What are Chinese characteristics?

Since the very beginning of reform which started three decades ago, the Chinese government has studied and incorporated many Western ideas, but almost all the reforms are labeled "reform with Chinese characteristics". So what are Chinese characteristics anyway?

Aufrecht and Bun (1995) use Ogden's model of three basic competing values as a framework to examine Chinese Characteristics. Ogden (1989) proposes a model of three basic competing values that are underlying all decisions of the Chinese government: traditional Chinese culture, socialism and development. Under each of these three values comes with certain factors. Under traditional Chinese culture, there are Confucianism, civil service exams, and *guanxi*; under socialism, the Communist Party, cadres, work unit, and equity; under development, China's social poverty, and educational level. All these factors and forces are likely to affect, either support or obstruct the implementation of reforms.

Political events affect each of the three values, Chineseness, socialism, and development, dominates at any particular time. The three values are constantly shifting in priority and interpretation, depending on how they further China's rulers' goal for China and the Communist Party, and how they impact their own political survival. The development of Chinese civil service reform will reflect this shifting of values and power.

Lieberthal (1995) has identified two central and defining characteristics of the Chinese political system. First, it is "strewn with organizations that have not become institutions." Organizations are simply administrative and functional structures; they are tools and means of governing, but in no way should they constrain the power of those who govern. In contrast, institutions "are practices, relationships, and organizations that have developed sufficient regularity and perceived importance to shape the behavior of their members". Second, and closely related to the first characteristic, is the fact that despite the presence of laws and regulations, top Chinese leaders are unregulated and essentially "above the law." They are only checked and restricted by the attitudes and resources of other members in the ruling group, that is, the rudest form of power politics. The fact that the bureaucracy in the new political state has far fewer institutional safeguards and is more vulnerable to political penetration is not purely accidental, given that there is still an absence of a modern and Weberian bureaucracy in China (Burns, 1988; Aufrecht and Li

1995; Tong *et al.*, 1999; Worthely and Tsao, 1999).

Now NPM has become a global phenomenon, spread from the developed countries to the developing countries because of globalization. China, as one of the most developed countries in the developing world, has been studying new management tools and methods from the developed world ever since the adoption of the policy of “open to the outside world” three decades ago. The international influence, including NPM, can be seen from the evolution of the three civil service reforms and economic reforms starting from 1978 in China. Elements of NPM such as contracting out, decentralization, privatization and downsizing, were introduced into the system with variations.

When comparing the approaches of NPM of Western ideas and the seemingly indigenous reform with Chinese characteristics, the differences can be easily found in the background of two reforms: the polity, ideology, culture, history, economic development stage, etc. Evidences of NPM-style reform can also be found as a dominant paradigm in China's reform. However, according to Wang (2003), there are some fundamental contrasts with NPM between the two reforms. First, China is not committed to staging NPM-style reform, even if it does for the purpose of efficiency and cost saving, which are really the universal doctrines of reform, rather than unique NPM strands. Secondly, the politicians and government did not use rhetoric to ensure support or persuade the opponents, the reform is seen to be a natural response to domestic request. Thirdly, the accession to WTO has imposed some external factors on China's administration, its domestic laws have to be amended or abolished to be in line with its accession commitment, higher standards of policy transparency and uniformity need to be performed, and the policies will be subject to annual examination on compliance. However, its influence is limited on the economic sector to a large extent, whereas, the civil service is much more politicized, and more resistant to external interference in the Chinese context. Even so, the scene may change if looked deeper. A local initiative will add more credit to the elites. This will partly explain why the government is reluctant to admit explicitly that it is adopting policy from elsewhere, and are happy to sustain the perception that the public sector is

aligned with contemporary trends of public management (Common 1999).

China's civil service reform is a response to the reform of the economic sector, which differs from that of developed countries' budgetary pressure. And the reform aims at strengthening the bureaucratic structure, which has been widely criticized in Western post-bureaucracy culture. But even compounding with the deficiency of state infrastructure, NPM will still be a guiding direction for China's future civil service reform in spite of the fact the future direction of NPM is a heated topic in the literature. The development of NPM has paved the way for knowledge management to be introduced into China and it will be more or less like the way NPM did, especially at present China has been making great efforts to build a public service-oriental government (Knox and Zhang, 2007).

3.4 Managing Knowledge in the Public Sector

Policy-making and service delivery have been the two major tasks of government. In these processes, knowledge has been an essential resource of the government and assumes special importance in the every step of the process of business of government. Most important of all, effective functioning of government rests on effective sharing and use of knowledge by public sector employees at various levels, central or local (Cong *et al*, 2007). Unlike other resources, however, knowledge is vague and elusive and not so easily managed in the traditional sense. What is managed involves the 'hard' (technical) and 'soft' (human and organizational) aspects of knowledge management (Hlupic *et al*, 2002), which deliberately provide an environment that is conducive to knowledge management processes and implementation of knowledge management strategy.

In government, effective knowledge management also can help government achieve the following objectives:

- to enhance the storage and value of knowledge;
- to increase knowledge learning ability of the groups and individuals in the

government organizations;

- to promote knowledge flows within the government organizations in order to enhance the efficiency of acquisition of knowledge;
- to make full use of the abilities of the particular members within the administrative departments and to develop their potentials;
- to facilitate government to develop professional administrative competence and the quality of decision making based on those matters that satisfy the public;
- to enhance the administrative quality, the performance of service innovations and to shape the good overall images of government for the public through application of knowledge;
- to guide the direction of knowledge innovation within government organizations and to facilitate the public to achieve their objectives more efficiently;
- to develop a new culture and worldview that are conducive to creation of new knowledge for the government (Wang *et al*, 2001).

Conclusion from the pilot study by the author (See section 5.4) shows that knowledge sharing is more emphasized in the public sector than in the private sector, knowledge sharing is increasingly recognized as a source of value creation, and organizations have come to identify knowledge management initiatives as strategic facilitators of competitive advantages.

3.4.1 Knowledge Management in the Public Sector

Knowledge management as a business practice has been applied to the private organizations to enhance and improve business operations to gain competitive advantage for profits. However, knowledge management can and should also be applied to public and non-government organizations to achieve their goals, yet not profit-making. Knowledge management has to be adopted and adapted to the contexts of public sector (McNabb, 2006). McNabb (2006) also claims that government organizations are increasingly implementing KM strategies to maximize the benefits of what they know to

help improve the efficiency and effectiveness of their business operation. KM is a collaborative and integrative approach to creating, capturing, organizing, accessing, using, and reusing intellectual assets – to get the right information to the right people at the right time to support management and decision making.

Although knowledge management has been widely discussed by many academics and practitioners, there is relatively little information on knowledge as found in the public sector. Therefore, few empirical studies of public organizations in the area of knowledge management can be found in the literature. However, the discussions below are the examples of the studies done in the public sector.

In a research project on knowledge management in public sector organizations carried out by Shields *et al* (2000), they made an attempt to analyze knowledge management initiatives in the Canadian Federal Services, and the impact of the knowledge-based economy on work in the public services. One of the main findings in the research was that knowledge and information initiatives are inherently political and have an uneven impact on different civil servants and on different client groups and members of the public.

McAdam and O'Dell (2000) have carried out an extensive study through survey and participative workshops to compare the perceptions of both public and private sectors organizations in regard to knowledge management to improve overall understanding and to develop sector specific learning. In the study, they modified Demarest's socially constructed models for their study to analyze four key dimensions of knowledge management: knowledge construction, knowledge embodiment, knowledge dissemination and knowledge use/benefit.

In discussing the scope of knowledge management in police work, Luen and AL-Hawamdeh (2001) made a distinction between explicit and tacit knowledge, based on which different implementation approaches are applied.

In managing explicit knowledge, a six-stage of knowledge management generic framework is used, involving the identification, analysis and selection of the appropriate knowledge that needs to be maintained and managed; the process of capturing and documenting knowledge that has been identified; the organization of the captured knowledge in a manner that is systematic, structured and facilitates retrieval; the storage of the documented knowledge in a form and location that is secure and yet easily accessible to the users; the process of retrieving documented knowledge in a timely, intuitive and relevant manner so as to address the users' needs effectively and efficiently; the process of reviewing and updating documented knowledge so as to keep such knowledge relevant and up to date.

Regarding tacit knowledge, the scope of knowledge management in police work is primarily in the areas of creating and sharing knowledge and information. Therefore, the focus of the issues here are the *willingness* of police officers to create and share knowledge and the *ability* of police officers to create and share knowledge. These are the most difficult issues to tackle. In this context, knowledge management is primarily about the management of the process of deriving value from knowledge to better achieve objectives. Based on which a system diagram showing the implementation of knowledge management and its relationship with other areas has been developed to include formal training, informal coaching, self-paced learning, and organizational culture, etc. The key to knowledge management in police work is knowledge sharing.

Al-Athari and Zairi (2001), in a comparative study, examined the availability of knowledge management systems in the Kuwaiti private and public sectors. They investigated the actual situation, and how it could be improved to achieve organizational and national objectives through more effective training methods and more investment in human resources. The study reveals that the majority of respondents from both public and private sectors believe that their KM systems were very important to the development of their organizations. The most important method used by Kuwaiti organizations to facilitate the sharing of knowledge between employees, was found to include internal

journals.

Wiig (2002) also made a comprehensive study on KM in public administration. Wiig investigated how knowledge management could play important roles in public administration particularly in four main areas, which were to (Wiig 2002, p. 224):

- enhance decision making within public services;
- aid the public in participating effectively in decision making;
- build competitive societal intellectual capital capabilities; and
- develop a knowledge management work force.

Wiig further argued that it is important to have comprehensive knowledge management within and in support of public administration. Having such an approach will allow “the society to prosper and increase its viability by making its people and institutions work smarter” (Wiig, 2002, p. 238), and furthermore give benefits and increase the citizens’ quality of life.

Cong and Pandya (2003) discuss knowledge management issues in the public sector and observe that knowledge management as a discipline is still in its infancy, especially in the public sector, evidenced by little discussion in the current literature. Hence, there are still many issues, which are not known. Strategies and plans for implementing knowledge management must be carefully thought-out in advance for successful implementation. There are concrete issues for governments to consider and address. Hence, they proposed to concentrate on three key issues currently relating to knowledge management, which are awareness and readiness of knowledge management in the public sector, differences between the public and private sector, and the need for a generic knowledge management framework for the public sector in spite of the fact that there are many issues that need to be addressed.

Liebowitz and Chen (2003) have also conducted another study on knowledge management issues in public sector organizations. In their study, they investigated how knowledge management could build and nurture a knowledge sharing culture in an

organization, developed a knowledge sharing effectiveness inventory to rate how well an organization is performing knowledge sharing activities and used the learning resources group of government agencies for testing the inventory. Some of the major findings are that individualized learning is usually transformed into organizational learning through documenting this knowledge into organization's knowledge repository; not much knowledge sharing culture exists within the organization; the organization has online communities of practice that allows people to exchange views and ideas in area of common interest; no success, failure, or war stories are systematically collected and used in the organization; and technological infrastructure to promote knowledge sharing environment is fairly established within their organization.

Liebowitz and Chen (2003) also have done a research on knowledge management issues in the public sector and found that organization has a relatively better knowledge management environment and communication flows, but has poor organization facilitation and measurement and also found that knowledge sharing in government possesses some unique challenges. First, it involves developing a "motivation and reward" system for encouraging knowledge sharing due to constraint of resources. Secondly, the government agencies are typically hierarchical and bureaucratic organizations that make sharing of knowledge difficult. Finally, there is a knowledge hoarding culture. They argue that most people seem reluctant to share knowledge because of "knowledge is power" paradigm".

In a study performed by Syed-Ikhsan and Rowland (2004a), they investigate the relationship between organizational elements and the performance of knowledge transfer. To achieve an in-depth empirical study, the Ministry of Entrepreneur Development of Malaysia was chosen for a case study. Five main independent variables were identified – organizational culture, organizational structure, technology, people/human resources and political directives – and these were tested against creation of knowledge assets and knowledge transfer performance using the Spearman rank test. Tacit and explicit knowledge were also tested against knowledge transfer performance. The results reveal

that there are significant relationships between some of the variables and either the creation of knowledge assets or the performance of knowledge transfer. Therefore, it is necessary for organizations to consider some of the elements that show a relationship between the tested variables in implementing a knowledge management strategy in an organization. However, certain variables that did not show any relationship should not be ignored totally, as they are still very important for some organizations.

Syed-Ikhsan, and Rowland (2004b) have undertaken another study and investigated and examined the availability of a knowledge management strategy in the Ministry of Entrepreneur Development of Malaysia and also examined perceptions on the benefits, problems, responsibilities and technological aspects that are entailed in managing knowledge in an organization and also discuss issues that encourage and restrict knowledge generation and knowledge sharing. The result reveals that knowledge in the Ministry was available in the Ministry's procedures and policies, job manual procedure, ISO 9002, desk file, work flow and databases.

Their findings are that the Ministry should have a well defined knowledge management strategy across the organization in gaining a lot of benefits of knowledge management, improvement of work quality, and up-to-date information and decision making; the most difficult issue to manage is changing employees' behavior; the most important issue that the respondents believed has potential for developing a successful knowledge management system.

Taylor and Wright (2004) investigate knowledge sharing in one public service context and identify factors that influence the readiness of an organization to share knowledge effectively in the UK healthcare service delivery. The resultant knowledge sharing model, which contains six factors: open leadership climate, learning from failure, information quality, performance orientation, satisfaction with change process, and a vision for change, gives managers further insight into what they must do to make the organization ready for, and to encourage knowledge sharing. Through factor analysis of interviews they have

illuminated the unique challenges facing public sector healthcare managers who seek to implement knowledge sharing processes and conclude that these distinctive challenges appear to stem from the highly regulated nature of government intervention in the sector. Hence, they propose the following dimensions to characterize the dynamics of this government-agency relationship: it seems to engender a rule-based culture that seeks compliance rather than intrapreneurship, innovation and improvement; the pressure for accountability for tax-payers' money and the concomitant media scrutiny erode the willingness of staff to reflect upon and learn from mistakes; changes emanate predominantly from government policies that are perceived to be imposed, and consequently received as unnecessary external interference; the focus on individual agency performance is at variance with the need for inter-agency collaboration across the entire service value chain.

Taylor and Wright (2004) emphasize that it is essential for managers to create a climate of openness, and also create a sense of urgency that conveys a compelling need to embrace knowledge sharing and contingent changes and warn that organizations cannot assume that if they move towards a knowledge sharing process, staff will embrace it wholeheartedly, hence they suggest that managers assess their organization's readiness to adopt knowledge sharing culture attitudes and behaviors. However, Taylor and Wright (2004) admit at the same time that the six-factor model is not unique to public sector agencies and their study only points to the way in which the government-agency relationship influence each of the factors, in ways that differ from private sector firms.

Discussion of knowledge management in the literature has focused on private and public sector differences in managing knowledge (Cong and Pandya, 2003; McNabb, 2006), knowledge management initiatives (Shields *et al*, 2000), benchmarking knowledge management Syed-Ikhsan and Rowland, 2004a), knowledge sharing (Liebowitz and Chen, 2003) and organizational learning (McNabb, 2006), benchmarking competence through knowledge management capability (Al-Athari and Zairi, 2001) and organizational elements and the performance of knowledge transfer and knowledge management

practices, particularly in decision making and situation handling (Wiig, 2002) and key factors that may influence knowledge management (Taylor and Wright, 2004) such as building a knowledge-sharing culture, organizational structure, strategy, and knowledge management systems. However, this author argues that these researches approach KM from each perspective of knowledge management and have not taken an integrated approach to knowledge management in the public sector, but rather focused on some components of knowledge management.

Therefore, in this research the author will take a holistic view of knowledge management and integrate the main components into a more comprehensive framework, including the most common knowledge management processes and the important organizational elements in the public sector.

To have an effective knowledge management in the organization, knowledge management processes as the basic knowledge management activities must be included in the comprehensive framework. In addition, some of the organizational elements as supporting factors such as organizational culture and structure will also be included in the framework. Participation of leaders and all members of the organization are emphasized in the framework with the support structure. However, this study does not intend to discuss all the processes and supporting factors in the literature. This study only chooses five of the most common processes for discussion, which are knowledge identification and capture, storage, sharing, application and use, and creation (Cong *et al*, 2007).

These five key knowledge management processes (see Figure 3.2) are carried out within a culture (i.e. the public sector) and supported by organizational elements, such as organizational structure and strategy, reward system, education and training, and information technology. Organizational culture set the scene for other functions or activities. If knowledge management is a truly organization-wide effort, it must become part of the organization's culture – the way the organization does things (Schein, 1985). This requires both a positive attitude to knowledge management and commitment by

everyone to contribute to the process. It also requires the organization itself to be seen to support the participation of all its members.

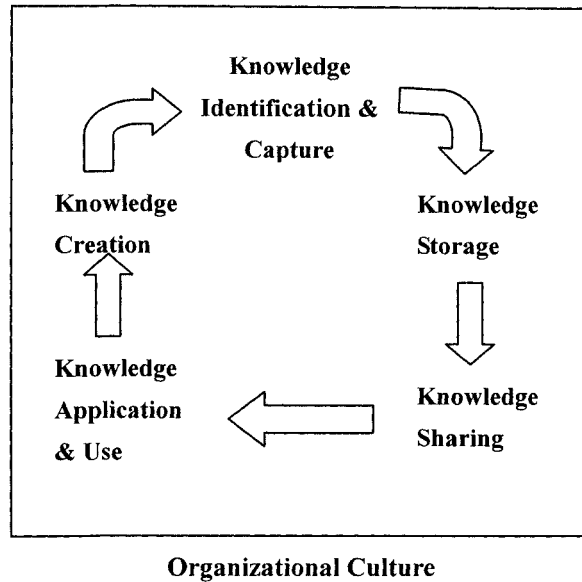


Figure 3.2: Knowledge Management Process

Source: Cong *et al*, 2007

By examining the knowledge management processes and relating these stages to government, we can see a better picture as to whether knowledge management will work in the government and to what extent it will work. Empirical evidences suggest that there are good and bad sides. The good one is that knowledge management can play a very important role in the strategic management of human capital in government, following government downsizing and a large number of retirement at all levels in the few years to come. Knowledge management is not a passing fad as some people in the government may think. Knowledge sharing should be encouraged so that lessons can be learned and reinvention of the wheel avoided. However, knowledge management deals with intangible assets; it is not easy to see the results in quantitative term in a short time. As usual, it will take some longer time before it permeates into the public sector.

One of the key issues in the implementation of knowledge management in the public

sector is lack of awareness of knowledge management concepts and processes in the public sector (Cong and Pandya, 2003). This can be a severe hindrance to the effective implementation of knowledge management initiatives in organizations in search of increased performance. Therefore, it is vital for an organization to understand the concept of knowledge management when starting a knowledge management initiative in order to succeed. Therefore, there is a need for a framework to be developed for the public managers and staff to understand the concepts and processes of knowledge management and the important factors and to implement knowledge management initiatives to enhance their performance.

3.5. Generic knowledge Management Framework in the Public Sector

3.5.1 Need for a Generic Knowledge Management Framework for the Public Sector

According to Cong and Pandya (2003), the reasons for such a need for a generic knowledge management framework are that, on one hand, the public sector is 'stakeholder' dependent while the private sector is 'shareholder' dependent, on the other hand, the private sector is competition based, while the public sector is dependent more on factors such as service delivery, information provision, and knowledge identification, sharing and, utilization.

3.5.2 Elements to Be Considered for Public Sector Knowledge Management Framework

Cong and Pandya (2003) believe that people and culture, processes, and technology are the key elements of the environment. However, to be successful in the implementation of knowledge management in the public sector, special attention also has to be paid to critical success factors affecting knowledge management processes in the organization.

3.6 Important Factors Affecting Knowledge Management Process

To bridge the gaps, factors that affect knowledge management processes and implementation must be identified and inhibitors are removed and facilitators promoted to ensure success of knowledge management initiative.

3.6.1 Important Factors Affecting Knowledge Management Processes in Organization

Researchers and practitioners have proposed many knowledge management principles and success factors, which are derived and distilled from the experience in practice and hence feasible and necessary in day-to-day operations. However, it is also imperative to develop a knowledge management environment tailored to each organization because of unique characteristic of the organization.

Drawn from literature review (see section 2.6.2 and 3.4.1), it is believed that the following important factors have great impact on the knowledge management process in the organization.

Organizational Culture

Culture may be defined as the shared values, beliefs and the shared value and practices of the people in the organization (Schein, 1985) and can have both visible and invisible dimensions (McDermont and O'Dell, 2001).

Leaders will have to play a central role in establishing some of the key conditions required to take knowledge management initiatives (Singh, 2008). They have a major influence on the organizational culture and the support conditions needed for the implementation of knowledge management. They have to show a willingness to share knowledge freely with others and convey the attitude that knowledge can solve the organization's problems and improve the performance for the whole organization. Such

an attitude creates an environment of trust, and influences attitudes throughout the organization in terms of knowledge sharing and the information flow, and cooperation and collaboration, and inspires willingness (Luen and AL-Hawadeh, 2001) in other employees to participate in the knowledge management activities in the organization.

Trust is involved in the culture of every organization and especially important in knowledge sharing and organizational learning (Scott *et al*, 2005). Trust between and among peers or team members is an extremely essential attribute in organizational culture, which is believed to have a strong influence over knowledge sharing. Team members require the existence of trust in order to respond openly and share their knowledge (Gruenfeld *et al*, 1996). Trust also increases communication between staff (human interaction), which is fundamental in encouraging knowledge transfer (Smith and Rupp, 2002) and transfer of best practices (Lucas, 2005).

Organization Structure

Organizational structure refers to the way people and jobs in an organization are arranged so that the work of the organization can be performed (Encyclopedia of Management, 2000, p. 692). Traditional organizational structures constrain reporting solely within divisional channels and slow the processes and raise constraints on information flow, hence, they limit each division's access to knowledge accumulated by other divisions of the organization. Such bureaucratic structures raise obstacles to knowledge sharing between different divisions and often consume great amount of time in order for knowledge to filter through every level. Knowledge sharing can prosper only when there are proper structures that support ease of information flow with fewer boundaries between divisions (Syed-Ikhsan and Rowland, 2004b)

Organizational Strategy

One of the key elements for knowledge management success is to develop an overarching organization-wide knowledge management strategy for the organization (Liebowitz, 1999). Tiwana (2000, p.103) points out that knowledge drives strategy and strategy drives

knowledge management. To have an effective knowledge management strategy, an organization should encompass everything the organization does to make knowledge available to the business (Donoghue *et al*, 1999 p. 48). Therefore, it is argued in this research that knowledge identification and capture, storage, sharing, application and use, and creation are the five key activities that are influential in knowledge management process. In addition, Donoghue *et al*, (1999, p. 48) stress that effective knowledge management also requires a combination of many organizational elements – technology, human resources practice organizational structure and culture – in order to ensure that the right knowledge is brought to bear at the same time. This is in line with the approach suggested by Quintas *et al* (1997) and Yeh *et al* (2006) who stress that a KM strategy should include culture, people, process and technology. Therefore, organization elements in this study, assisting in formulating the conceptual frameworks, also should include: organizational culture, organizational structure, education and training, reward system, and information technology

It is believed in this study that it is very important to manage these organizational elements accordingly if the government desires to implement a knowledge management strategy in the public organization and knowledge can be easily created, identified and captured, stored shared, and applied in the organization If all these elements can be managed effectively. However, knowledge management strategy must be linked to the business strategy of the organization in order to achieve its goals and objectives.

Education and Training

Smith *et al* (2001) has discovered that the educational training of all the employees and the alignment of consensus is another one of the key factor for knowledge management. Knowledge management has been an important issue because it deals with the most valuable asset, intellectual capital. Knowledge management is an approach to build the learning organization in which its members can acquire, share, create knowledge and apply it in their decision making to enhance efficiency and effectiveness. Knowledge management involves learning. However, only people are able to learn. Learning can take

the forms of individual learning and organizational learning. Although organizations ultimately learn through individuals (Dodgson, 1993), yet it is widely recognized that organizational learning is more than the sum of individual learning. Individual and organizational learning are intertwined with each other in the context of an organization and they are a form of mutual learning (March, 1991). Argyris and Schon (1978) distinguish two kinds of organizational learning: single-loop learning and double-loop-learning. Other theorists made somewhat similar distinctions between adaptive and generative learning (Senge, 1990) and higher and lower-level learning (Fiol and Lyles, 1985).

Single-loop learning occurs when a change in the behavior routines happens. It is a form of instrumental learning and concerned with the detection and correction of errors through a feedback loop, in pursuit of existing goals within existing structures in a manner akin to the routine operation of a thermostat. The thermostat reacts to the condition 'too hot' or 'too cold' by turning heat on or off as appropriate to maintain a fixed temperature (i.e., the existing goal). The thermostat does not question why either state is unsatisfactory. Single-loop learning leaves the values and norms underpinning a strategy or action unchanged. It is corrective, incremental and adaptive, and does not involve high cost and time, and is hence suitable for organizations operating in an environment of slow change (Rodriguez *et al*, 2003; Sun and Scott, 2003).

In contrast to the routine, repetitive characteristics of single-loop learning, double-loop learning is non-routine in character and based on cognitive processes. The double-loop refers to the two feedback loops that connect the observed effects of action with strategies and values served by strategies (Argyris and Schon, 1996). Double-loop learning promotes inquiry, challenging current norms, assumptions, objectives and basic policies. It results in changes to the underlying mental frameworks, such as theories-in-use; assumptions; organizational strategies and norms; and the ways in which competencies and environments are construed. Therefore, double-loop learning may cause much greater changes than single-loop learning in organizations, but, of course, is more difficult to

achieve.

One of the crucial issues in managing knowledge is to develop people's ability to learn and build core competence (Hamel and Prahalad, 1994) and one way of doing this is through education and training. The education and training of personnel can take the following three forms: off-job-training, on-job-training, and self-learning. Off-job-training is classroom education away from the workplace. It focuses on various trainees (including mid-, high-, and entry-level personnel) and hosts a series of classes according to the management position, technical work, and administrative work. On-job-training are the training activities by the department manager for their subordinates. Self-learning includes self-learning activities by the employees themselves.

Incentives or Reward System

If knowledge is being extracted from individuals or groups for others to use, it is likely that incentives or rewards for knowledge creation, contribution, and knowledge sharing are required (Milne, 2007). According to Syed-Ikhsan and Rowland (2004), employees need a strong motivator in order to share knowledge. It is unrealistic to assume that all employees are willing to easily offer knowledge without considering what may be gained or lost as a result of this action. Many other researchers also discovered that incentive program plays a major role in the activity of knowledge management as well (Davenport *et al*, 1998; Liebowitz, 1999; Alavi and Leidner, 2001). Such incentive program not just positively influences the amount of support that the members of the organization are willing to give for the activities of knowledge management; it also increases their willingness to participate in the creation and sharing of knowledge. Managers must consider the importance of collaboration and sharing best practices when designing incentives or reward systems. The idea is to introduce processes in which sharing information and horizontal communication are encouraged and indeed rewarded. Such rewards must be based on team rather than individual performance (Goh, 2002).

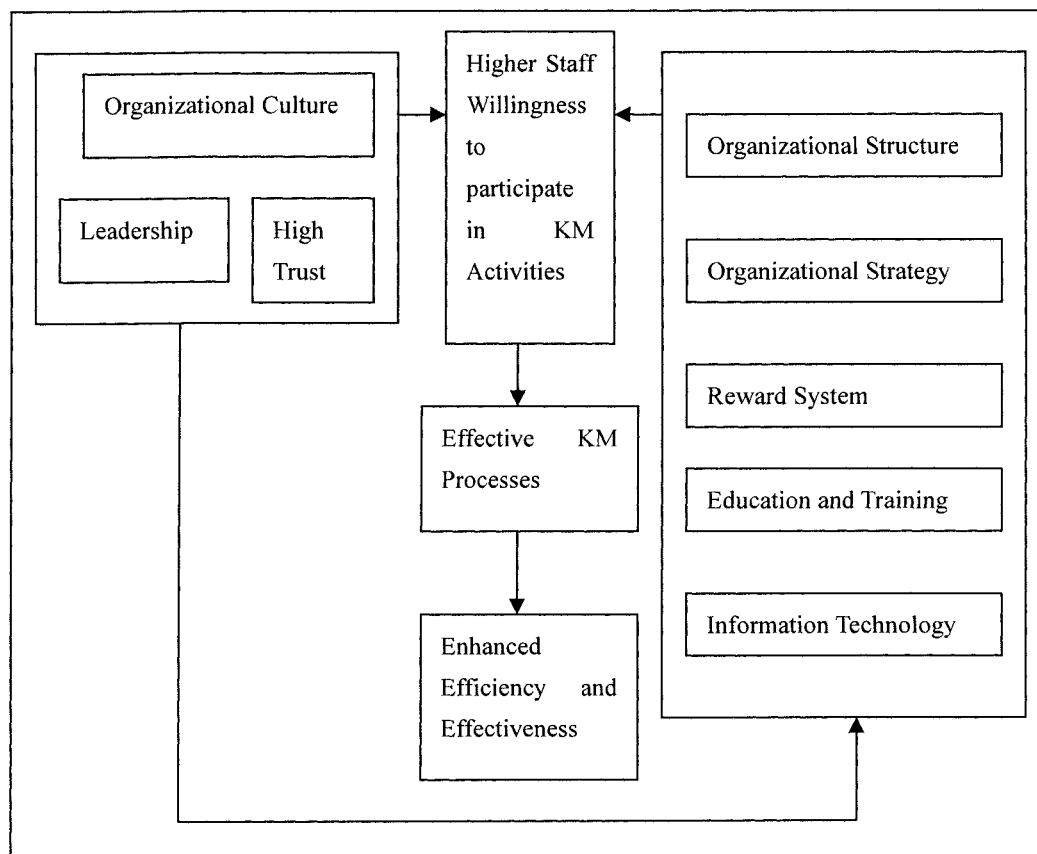
Information Technology

Information technology refers to the fundamental building block of information technology that supports and coordinates knowledge management. Information technology can enable rapid search, access and retrieval of information, and can support collaboration and communication between organizational members. It can play a variety of roles to support an organization's knowledge management processes (Alavi and Leidner, 2001 and Wong, 2005). Smith *et al* (2001) discover that advanced information technology can allow the sharing and transferring of data on different platforms. Without information communication technology ICT, knowledge sharing can be obstructed. Hence, information technology and knowledge management are closely tied together, because both help the propagation of structured knowledge vertically as well as horizontally within the organization. They also make searching and using knowledge much easier. Organizations use information technology to facilitate knowledge sharing through creating or acquiring knowledge repositories, where employees share expertise electronically and access to shared experience becomes possible to other staff.

Combining the knowledge processes and the organizational elements, the framework developed in this study is shown in Figure 3.3. The framework has been derived from the literature review relating to both the private and public sector and identified and verified by the interviews conducted. At the first glance, the framework does not show it is a knowledge management framework for the public sector. As a matter of fact, the constructs presented in the framework seem no difference at all from non-public sector. All the elements in the framework can be found in the knowledge management literature for the private sector. The reasons for developing such a generic knowledge management framework are that knowledge management as a theory and practice was developed and practiced in the private sector in the first place, and then it has been adopted by the public sector (McNabb, 2006), so were Total Quality Management (TQM), Business Process Re-engineering (BPR), etc. Knowledge management, as a management tool, can be applied to both private and public sectors because organizations, whether public or private, share some commonalities. Therefore, knowledge management is no exception. However,

the devil is the context. The context in which business operates in the public sector is widely recognized as differently from the private one. Although the constructs may appear the same in the framework, the weight is different when constructs are applied to the respective sector because they are not treated equally in their respective contexts. Even in the public sector, focuses are placed on different elements due to the nature of the organization and knowledge held in each department in the organization when knowledge management is implemented. For example, Luen and Al-Hawamdeh (2001) describe knowledge management principles and practices in terms of explicit and tacit police knowledge, which is closely related to police work in Singapore. It is context-specific. That is the difference from the private sector. Therefore, the characteristics and contexts of and difference between the public and private sector have to be taken into the consideration when the framework is applied. In this study, the context is a Chinese public organization, China Customs.

Figure 3.3 A Generic Knowledge Management Framework for the Public Sector



3.7 Chapter Summary

The public sector has been widely considered as different from the private sector. However, every organization, whether a business or not has a theory of business, which fits the public organizations perfectly as well. Therefore, management practices and models developed in the private sector can and should be adopted into the public sector, but need to adapt to its context. The development of NPM in the public sector has laid a solid foundation for knowledge management practices to be implemented in the public sector.

Three decades of economic reforms in China has made a great impact on its administrative reforms (in disguised political reform), although almost all the reforms are labeled ‘reform with Chinese characteristics’, and it has everything to do with its history, socialism, and development. Therefore, to implement knowledge management initiatives in China will inevitably be constrained by these factors.

Literature review shows that there is relatively little empirical research in the public sector compared to the private sector. There also appears to be relatively very little empirical work in the Chinese public sector. Most of the existing literature focused on knowledge sharing and key factors that may affect knowledge management and knowledge management system. Knowledge management in the public sector is still an uncultivated area and needs empirical evidences to inform the public managers to make better decision in policy-making and service provision, specially so in the Chinese context. Therefore, a framework for the Chinese public sector has been proposed and important factors considered for the public managers to have a better understanding of knowledge management in order to enhance their efficiency and effectiveness.

Chapter 4 Research Methodology

4.1 Introduction

The main purpose of this research is to explore knowledge management processes and the implementation process in the public sector. In order to accomplish this research, a case study strategy is adopted. Use of an ‘embedded’ single case has been chosen (Yin, 1989) because it enables us to contrast and compare various units of public organizations. In addition, the use of a case study enables us to use method triangulation, and hence affords a holistic perspective on knowledge management processes and the implementation of knowledge management initiatives and important factors in the public organization.

Given the above background, the first part of this chapter briefly discusses the major methodological issues in research in general terms. Then, in the second part of the chapter, the specific issues with regard to this research are discussed. Therefore, the sub-topics that are discussed in this chapter are:

- The alternatives research paradigms.
- Philosophical underpinnings of positivistic approach versus subjectivist approaches.
- The main differences between quantitative and qualitative research.
- The nature of knowledge generated by positivist and subjective approaches.
- Research paradigm and the case for methodological triangulation.
- The nature of research methodology and justification of the research design.
- Source of data and methods of data collection (interview, observations, documentary analysis).
- Data analysis.

4.2 The Alternative Research Paradigms

According to Hussey and Hussey (1997), a paradigm refers to “the progress of scientific

practice based on people's philosophies and assumptions about the world and the nature of knowledge" (p. 47). It is a set of overarching beliefs or perspectives that scientists use to make sense or understand and explain the world or part of the world. The research paradigm, thus, determines the type of reality to be investigated (the world "out there" or the constructed or perceived world in the mind of human beings) and hence influences the methodology and methods to be used in the research inquiry (Crotty, 1998). Consequently, in social science, there are two main research paradigms. These are the quantitative and qualitative paradigms (Creswell, 1994). On one hand, the quantitative paradigm is also variously known as positivist, objectivistic, traditional, and experimental or empiricist paradigm. On the other hand, the qualitative paradigm is also differently termed as subjectivist, interpretivist, phenomenological, constructionist, humanistic or naturalistic paradigm.

4.3 Philosophical Underpinnings of Posivistic Approaches vs. Subjectivist Approaches and the Nature of Knowledge Generated

As discussed in the previous section, research paradigms or philosophies are categorized into two major groups, namely positivistic and subjectivist and each is guided by different diametrically opposed philosophical assumptions. These are ontological, epistemological, axiological, rhetorical and methodological assumptions (Creswell, 1994) and are briefly discussed below:

- **The Ontological Assumption.** The ontological assumption deals with the nature of reality/worldview or what can be known of the things that exist. Under subjectivist approaches, reality is assumed to be a subjective, social construction that exists in the mind of conscious human beings. Therefore, this is presumably varied in different situations as "seen" by different people, and can be influenced by the researcher. Given the varied nature of reality under subjectivist approaches the emphasis is on the use of qualitative methods of data collection in order to understand how human beings make sense of their world or situations. On the other end (extreme),

positivistic approaches assume that reality is objective and independent of the researcher and therefore can be “objectively” observed and measured. Thus, data that is collected about reality should be amenable to quantitative and objective analysis.

- **The Epistemological Assumption.** The second major philosophical assumption is the epistemological assumption that deals with the issues of how we can know the world and relationship between the researcher and those who are researched. According to Crotty (1998, p.18), the epistemology stance deals with “an attempt to explain how we know what we know and to determine the status (claims) to be ascribed to the understanding we reach”. When using subjectivist or interpretivist approaches, on one hand, the researcher maintains a close interaction or collaboration with those who are researched. The researched are regarded as co-researchers (not “inanimate” subjects to be researched ON as is in positivistic approaches) who are “conscious human being” with values, creativity and capability to contribute to the research. The logic of research becomes “research with” and not “research on” research participants. This leads to generation of “deeper and richer” knowledge that is grounded in the lived-experience of the research participants. The research issue is thus, seen from the “eyes or framework of the research participants”. On the other hand, when using positivistic approaches, the researcher is required to be detached from those who are researched – the subjects, that is, to be neutral so as to produce objective data and knowledge. The aim of this is to produce “uncontaminated” knowledge without researcher bias or confounding influence. Under pure positivist approaches like experimental research, human beings are treated as “inanimate” subjects and are supposed to be “passive conformist” to the “almighty sole possessor of knowledge and research know-how” – the researcher – who is supposed to use predetermined scientific research procedures. Knowledge is thus generated from a reductionism, external frame of reference of the “objective” researcher.
- **The Axiological Assumption.** The third philosophical assumption is axiological assumption that deals with the role of values in research. In subjective approaches,

personal values of the researcher and research participants are acknowledged or accommodated and critically examined as part of the research. The assumption is that research is value-laden as long as the researcher is dealing with human beings with values. On the contrary, in positivist approaches (e.g., experiments), these values are muted, that is, are supposed to be kept out of study. The researcher is supposed to conduct the research in a value-free and unbiased manner. This philosophical assumption possesses problems when dealing with conscious human being who have values. The problem is how to “bracket out” the inherent values of the researcher and those who are researched.

- **The Rhetorical Assumption.** This is the fourth philosophical assumption that deals with the style of language that should be used in research. Under this assumption, phenomenological approaches use personal voice, informal and context-bound language. Qualitatively related words such as understanding, making sense or discovering the meaning that exclude quantitative connotations implied in positivistic or quantitative research are used. The latter use formal, impersonal language and accepted precise definitions of concepts that can be quantitatively operationalized.
- **The Methodological Assumption.** The last philosophical assumption is the methodological assumption that deals with the research process used. Under subjectivist approaches, the researchers follow the inductive approach or logic of framing the research that seeks to build “emerging theories” where categories or theories are constructed or emerged from empirical observations. The aim of using the inductive approach is to come up with a theory that is grounded in the specific situation or context of the study. In view of this approach to research, Crotty (1998, p.32) defines *induction* as “the process whereby a general law is established by accumulating particular instances”. On the other hand, under positivistic approaches (e.g., in experiments) a deductive approach is used. This is mainly concerned with theory testing. Theories and hypotheses are identified a priori and then tested empirically to establish causal relationship (cause-and-effect) among tested variable,

and hence either to uphold or refute the theory under investigation. The main aim of such structured research is to produce valid and reliable data that can be generalized to wider situations. In other words, to produce deterministic, generalizable or universal or covering laws that can be used to predict and explain the phenomena under study. Such type of knowledge aimed at generating general or “covering laws” may have low ecological validity, that is, it may not be valid in very particular or specific situations – it is context-free.

Table 4.1 Assumptions of the Two Main Paradigms

<i>Assumption</i>	<i>Question</i>	<i>Quantitative</i>	<i>Qualitative</i>
Ontological	What is the nature of reality?	Reality is objective and singular, apart from the research	Reality is subjective and multiple as seen by participants in a study
Epistemology	What is the relationship of the researcher to that researched?	Researcher is independent from that being researched	Researcher interacts with that being researched
Axiological	What is the role of value?	Value-free and Unbiased	Value-laden and biased
Rhetorical	What is the language of research?	Formal Based on set definitions Impersonal voice Use of accepted quantitative words	Informal Evolving decisions Personal voice Use of accepted qualitative words
Methodological	What is the process of research?	Deductive process Cause and effect Static design – categories isolated before study Context-free Generalizations leading to prediction, explanation and understanding Accurate and reliable through validity and reliability	Inductive process Mutual simultaneous shaping of factors Emerging design – categories identified during research process Context-bound Patterns, theories developed for understanding Accurate and reliable through verification

Source: Adapted from Crewell (1994)

The above-discussed philosophical assumptions of positivistic or quantitative and subjectivistic or qualitative approaches are summarized in Table 4.1.

Therefore, from a philosophical perspective, a major dichotomy that exists in research lies in choosing between positivist and subjectivist approaches (Easterby-Smith *et al*, 1991; Hussey and Hussey, 1997; Saunders *et al*, 2002; Jankowicz, 2005). The positivist ontology believes that reality is real and predictable (Healy and Perry, 2000), sees the world as external and objective, and the observer as independent of what is observed. The choice of what to study, and how to study it, can be determined by objective criteria rather than by human beliefs and interests (Saunders *et al*, 2002). Thus, the researcher should focus on facts, look for fundamental laws, reduce phenomena to the simplest elements, formulate hypotheses and then test them (Easterby-Smith *et al*, 1991; Hussey and Hussey, 1997; Jankowicz, 2005). The epistemology for positivist is based on the assumption that the findings are true (Healy and Perry, 2000). The positivist approach is further believed to be fast and economical, and has a wide coverage of the range of situations. However, such research is criticized for its arguable objectivity and its inability to understand processes or the significance that people attach to actions (Easterby-Smith *et al*, 1991; Hussey and Hussey, 1997; Saunders *et al*, 2002; Jankowicz, 2005). The subjectivist ontology (See Table 4.1), by contrast, is based on the assumption that reality is constructed by the observer making sense out of the external events and data with which he is presented (Healy and Perry, 2000). It is thus accepted as value-laden, focusing on people's meanings, trying to understand what is happening, looking at the totality of each situation and change processes, and developing ideas through induction from data (Easterby-Smith *et al*, 1991; Hussey and Hussey, 1997; Saunders *et al*, 2002; Jankowicz, 2005). The epistemology for subjectivist is based on the assumption that the findings are subjective (Healy and Perry, 2000). Nonetheless, the subjectivist approach suffers from weaknesses, such as: data collection can take up plenty of time and resources, and the analysis and interpretation of data may be very difficult

and untidy because it is harder to control the pace, progress and endpoints (Easterby-Smith *et al*, 1991; Hussey and Hussey, 1997). The positivist approach to research owes much to what we would think of as scientific research, and treats the social world in the way it would be approached by the natural scientist (Saunders *et al*, 2002), and thus encounters the following difficulties (Jankowicz, 2005):

- **The problems are inherently complex** The problems dealt with by the social researchers are frequently very complex: there are many variables, some modifying the relationships between others.
- **Problems cross discipline boundaries** Social problems don't sit within the neat boundaries of academic knowledge, or within categories which might suggest an appropriate technique to apply; they're frequently 'messy'.
- **Technical matters are rarely at the root of the problem** Social problem-solving is value-driven, may have social consequences, and is frequently intertwined in contradictory assumptions about social policy.
- **Problems don't have an independent life of their own** Professionals don't think in ways which are easily analyzed by the hypothetico-deductive method featured in the positivist approach, which assumes a dispassionate 'observer', the existence of problems and truth 'out there', and a situation which sits still enough for the effects of scientific interventions to be noticed. Intuition, gut feeling, and flair are involved in management decision-making, and so on.
- **Problems are culturally relative** People in different cultures may treat the same social problems and evidences in different ways. Because of these difficulties, there is normally a very small space for the positivist approach in the social research (Jankowicz, 2005).

Based on the background literature of Chapter 2 and 3, the issues involved in this research are known to be very complex, cross discipline boundaries and culturally relative; the 'facts' are very difficult to collect. The empirical works of this research thus mainly focus on gathering data about relevant respondents' or interviewees' subjective

perceptions, beliefs and views on the issues. Therefore, it is the subjectivist, not positivist approach that is adopted in this study (Cong *et al.*, 2007). This is the philosophical stance taken for inference and model building of this study.

4.4 The Main Differences between Quantitative and Qualitative Research

Another major concern in social research is the dichotomy between quantitative and qualitative approaches.

The above-discussed philosophical assumptions give rise to the main differences among the main research paradigms. These differences emanating from the philosophical assumptions on how quantitative and qualitative research should be conducted are briefly summarized by Bryman (1998) in the Table 4.2 below:

Table 4.2: Some Differences between Quantitative and Qualitative Research

	QUANTITATIVE	QUALITATIVE
(1) Role of qualitative research	Preparatory	Means to exploration of actors' interpretations
(2) Relationship between researcher and subject	Distant	Close
(3) Researcher's stance in relation to subject	Outsider	Insider
(4) Relationship between theory/concepts and research	Confirmation	Emergent
(5) Research strategy	Structured	Unstructured
(6) Scope of findings	Nomothetic	Ideographic
(7) Image of social reality	Static and external to actor	Processual and socially constructed by actor
(8) Nature of data	Hard, reliable	Rich and deep

Source: Adapted from Bryman (1998), p. 94.

The main tenet of quantitative paradigm is the existence of objective reality that is value-free, cross-cultural and ahistorical and can be objectively observed and measured with certitude provided that one uses predetermined and accepted scientific protocols/methods (Crotty, 1997), that is, the use of hypothetico-deductive procedures. According to Gill and Johnson (1997, p.139), this “positivist epistemology limits its conception of valid or warranted knowledge (i.e., science) to what is taken to be unproblematic observable ‘sense-making data’”. This is presumed by positivist to lead to production of “objective form of knowledge (about reality) that specifies the precise nature of laws, regularities and relationships among phenomena measured in terms of social facts” (Morgan and Smirich, 1980). Thus, pure positivism see the world as a concrete structure that can be observed and hence reject the relevance of human subjectivity (Gill and Johnson, 1997). The postulates of quantitative or positivistic research have given rise to a range of criticisms frequently leveled against this paradigm in social sciences. This has led to the emergence of the anti-positivism paradigm, that is, the subjectivist or interpretivist views of what is meaningful reality. Similarly, there are emerged post-positivistic views against the “pure” positivistic view of reality that rejects the relevance of human subjectivity. The post-positivists admit that there are no value-free researchers and research methods that may be wholly objective and certain to generate knowledge that is totally valid and generalizable in all situations.

Therefore, qualitative research is defined as a basic strategy of social research that usually involves in-depth examination of a relatively small number of cases, and in which cases are examined intensively with techniques designed to facilitate the clarification of theoretical concepts and empirical categories (Ragin, 1994). By contrast, quantitative research largely concentrates on issues that can be measured accurately, and where an analysis of such measurements leads to conclusions based on ‘reliable’ variables. In general, qualitative approaches are primarily associated with subjectivist research, and quantitative primarily with positivist (Jankowicz, 2005). However, it does not mean that qualitative approaches can only be used by subjectivist research, or quantitative

approaches only by positivist research. Both qualitative and quantitative approaches can be combined in a research, even when it is based on a purely subjectivist rationale (Jankowicz, 2005). But both subjectivist and positivist cannot be combined in the research because their epistemologies are based on mutually contradictory assumptions (i.e., the findings are true or not). "It is very important not to confuse the two distinctions: that between positivist versus subjectivist ontology and epistemology on the one hand and between qualitative versus quantitative data and analysis on the other. Even the most experienced of researchers make this mistake" (Jankowicz, 2005, pp.122-123).

From Section 4.3, it is known that the subjectivist approach is adopted in this study. So, obviously, the research will use qualitative approaches.

4.5 Nature of Knowledge Generated by Different Positivistic and Interpretative Paradigms

Whatever research paradigm adopted in research has implications on the type of knowledge produced. Thus, under subjectivist or interpretivistic approaches, knowledge that emerges from the research process is a result of collaborative effort of the researcher and research participants (co-researchers) and seeks to understand how they make sense of their particular situations or practices. Knowledge is, in this way, generated inductively. This kind of knowledge is grounded in the context of the particular situation under study (e.g., a case study). Such type of knowledge has high ecological or naturalist validity as are particularized to specific cases or situations, and cannot be wholesomely generalized to other situations outside the context of the study. It is rooted in deeper or richer understanding of the specific or immediate situation of those who are researched as they interact with other human being and their world/situations. On the other hand, positivistic approaches (e.g., experiments) use a deductive approach with structured hypotheses, random sample, control groups and "independent" researcher in order to produce objective, "uncontaminated knowledge" that can be generalized to wider situations, which can also be used to make predictions and thereby establish deterministic, universal or

covering laws. How “human subjectivity” can be totally eliminated in social positivistic approaches dealing with conscious human being in order to generate “objective, reliable and valid” knowledge is, probably, a matter of philosophical conjecture. Hatch (1997, p.48) succinctly summarizes the difference in knowledge generated by positivistic and subjectivist approaches as follows:

Epistemology concerns assumptions about how knowledge is obtained or created...Objectivist epistemology is built upon a belief that one can only know through independent observation. Notice that taking an objectivist position means believing that the world exists independent of knowledge of it. For the subjectivist, all knowledge of the world, if the world exist in an objective sense (subjectivists often make no claims about this whatsoever), is filtered through the knower and thereby is powerfully altered by cognitive and/or social and cultural forces. Those who take a subjectivist stand believe that knowledge is relative to the knower and can only be created and understood from the point of view of the individual who are directly involved.

4.6 Research Paradigms and the Case for Methodological Triangulation

The main two research paradigms – the positivistic and subjectivistic – in social sciences represent two extreme philosophical bases for conducting social research. This situation represents a false dichotomy in social sciences (Creswell, 1994) and often forces a choice between qualitative or quantitative research, exclusively. Sayer (1992) criticizes this situation as “methodological imperialism”. It is situations in social sciences where social phenomena are either exclusively studied by positivistic approaches (that search for regularities and hypothesis testing) and thus exclude interpretative approaches that seek to understand human actions and how they make sense of their worlds.

The second type of methodological imperialism emphasizes that social phenomena should be wholly studied by subjectivist or interpretivistic approaches, with an overriding thrust of seeking to understand human subjective and multiple meanings and therefore positivistic approaches that are overly deterministic should be avoided. Thus, in this study this author seeks to avoid such methodological imperialism, that is, to avoid a narrow-minded way of studying social phenomena in organizations. This author believes that organizations exist as objective reality regardless of the subjective meaning placed upon them by human beings. But, at the same time, organizations are subjective creations of human beings and they can influence the way they interact with them. Thus, this author assumes a realist ontological assumption that the social world exists independent of human subjective meaning, but at the same time accepts that human subjectivity/meaning attached to the world is important for understanding that world (Gill and Johnson, 1997). Consequently, the meaningful and comprehensive study of the world and social phenomena can be accomplished through methodological triangulation or methodological pluralism. Qualitative and quantitative research methods may be used as complementarily for a better understanding of social phenomena, which in turn enhances creditability of our study at both micro and macro levels (Lee, 1999). Thus, social phenomena in organizations could be comprehensively understood from both the researchers' and participants' perspectives (Bryman, 2001, p.451). Methodology triangulation helps to avoid the bias or problem of using a single-method approach (Gill and Johnson, 1997 and Hussey and Hussey, 1997). For instance, the positivistic approaches ignore the relevance of subjective aspects of human actions, that is, how they make sense of their worlds. On the other hand, subjectivism rejects the existence of systematic regularities within organizations. But these systematic regularities within organizations can be understood by use of quantitative research. This is the position taken by Lee (1999, p.11) who contends that theses:

Systematic regularities in employees' behavior, interpretations, and agreement on organizational processes that allow the evolution of dominant modes, larger

organizational cultures, and strong agreed upon, taken-for-granted, and virtually singular organization reality. In other words, such systematic regularities allow people to act as if there is something akin to the objective reality. Moreover, it suggests the desirability of quantitative research aimed at understanding this subjectively determined but essentially uniform sense making.

4.6.1 The Nature and Justification of Methodological Triangulation

Methodological triangulation is defined as “the combination of methodologies in the study of the same phenomena” (Ghauri *et al*, p. 93) and this is one of the four forms of triangulation in research identified by Easterby-Smith *et al* (1999). Other forms of triangulation are: data triangulation – where data is collected from multiple sources and at different period researching a particular issue; investigator triangulation – where a number of researchers investigate a problem independently and compare their findings; theories triangulation – where a theory in a different field of study is used to understand a phenomenon in another field of study.

The rationale for triangulation is to eliminate the inherent bias associated with the use of single source of evidence, investigator, theory and methods.

Creswell (1994) further identifies two types of methodological triangulation and these are: “*Within method*” triangulation where exclusively either quantitative approaches or qualitative approaches are used to study a phenomenon; “*Between method*” triangulation where both qualitative and quantitative methods to data collection and analysis are used to complement each other in the same study. In this study, qualitative approaches where interviews, observations and documentary analysis are used together as part of the case study.

Creswell (1994) gives the following justification for the use of *methodological triangulation* to: increase the validity of the study – as the shortcomings of one method

are compensated by the strengths of another method; study the convergence of results; investigate different aspects or perspective of phenomena; use one method for exploratory purpose to inform the subsequent method at another phase of the study e.g., the use of discovery-oriented approach (see, for example, Kohli and Jaworski, 1990) to generate hypotheses and propositions that may be subsequently tested by quantitative methods; explore similarities and contradictions or new perspectives of a phenomena under study; enhance the scope and breadth of the study.

Despite the merits of methodological triangulation, any researcher using it needs to pay attention to the inherent limitations of such an approach. These include: it increases the complexity of the study; data collection and analysis may be time consuming and expensive; replication of the study might be difficult, especially where qualitative methods are used (Hussey and Hussey, 1997); sometimes, results from different methods might be difficult to compare or might be inconsistent.

4.7 The Nature of Research Methodology and Choice and Justification of the Research Design

4.7.1 The Nature of Research Methodology and Methods and Techniques

According to Hussey and Hussey (1997), there is a distinction between research *methodology* and research *methods*, and the latter is a constituent part of the former. They define *methodology* as “the overall approach to the research process, from the theoretical underpinning to the collection and analysis of data” while *methods* are “the various means by which data can be collected and/or analyzed.” Thus, the researcher should specify the following as part of his/her research methodology/design (Saunders *et al*, 2000; Hussey and Hussey, 1997; Ghauri, 1995; Neumann, 1994; Creswell, 1994; Jankowicz, 2005): what is the problem being studied; the rationale for studying that problem; where the study will take place; the nature of data to be collected and justification that data is appropriate for the study; the source of data/evidence; the

characteristics of the sample, how the data will be collected and by which methods, which methods will be used to analyze that data and period of the research.

Research methods and techniques are often used interchangeably (Jankowicz, 2005). For instance, some experts submit that face-to-face interview is a research method (Neuman, 2000; Neuendorf, 2002; Saunders *et al*, 2003), but others argue that it is a research technique used in research methods, such as survey (Jankowicz, 2005). In order to clarify the confusions, Jankowicz (2005) claims that a method is a systematic and orderly approach taken towards the collection and analysis of data so that information can be obtained from those data. He therefore classifies research methods in social research into four types: explicatory method, case-study method, survey method and experimental method. Techniques, in contrast to methods, are particular, step-by-step procedures that can be followed in order to gather data, and analyze them for the information they contain (Jankowicz, 2005). As Bennett (1986) suggests, techniques regarding how to do something rather than what to do, or why to do it. Jankowicz (2005) thus treats conversation, interview, focus group and questionnaire as research techniques.

Based on the distinction between research methods and techniques, Jankowicz (2005) makes further differentiation among the four methods as follows: in *explicatory method*, questions are directed at people and at written sources. Issues and events in the past are concerned in order to understand the present and predict the future; judgments about data are made through using historical review; conclusions are drawn on the basis of the themes that are recognized in interview and observational material by means of the ethnographic technique or a variety of biographical analysis techniques. The method focuses on the personal and social meanings of phenomena as experienced by the people or organization being studied, and draws out the implications of those meanings for them; *Case study* method is used when a set of issues in a single organization (or a smaller unit of analysis) are a focus, and the factors involved in an in-depth study of the organization need to be identified. Alternatively, it is possible to carry out a comparative case study, in which the same questions can be asked in several related organizations. The data in a case

study are obtained largely through the analysis of written documents, and by means of interview technique; in addition, stakeholder analysis is also available; a *survey method* aims to establish people's views of what they think, believe, value or feel, and discover these views for their own sake, or support an argument that is presented through sampling a population of potential respondents to generalize conclusions more widely. In contrast to historical review, the survey method draws most of its data from the present. Questions are directed at relatively large groups of people who represent a larger population. The method may use techniques such as questionnaire, interview, focus group, and so on; *Experimental method* may be used if the researcher is sufficiently familiar with the situations or events that are studied, in which the relative importance of one or more variables can be identified through techniques such as observation. Then, an explanation of the events can be made, or a more general theory of such events can be contributed.

This research is interested in investigating the public organization's knowledge management current practices, issues and difficulties, and important factors and seeing their views and perceptions on knowledge management. It should draw most of its data from present to target the public organizations. So the experimental method and the survey method are not suitable because the knowledge management issues are quite complex and recently concerned. Neither is the explicatory method that mainly focuses on historical review. Therefore, case study method that involves a single organization (or smaller unit of analysis) are both suitable for this study is considered as a right choice for the investigation on public organization knowledge management processes and practices and identified important factors in the research.

Furthermore, based on the differentiation among the four methods, it may be found that a technique may be used in several methods (e.g., interview in case study), and a method may use several techniques (e.g., case study uses interview, focus group and the analysis of written documents). Now, the case study method has been selected as a suitable one for this study.

4.7.2 Choice and Justification of Research Methodology/Design

As stated in Cong *et al*, 2007, one of the important factors that determine the choice of the research methodology is the nature and objectives of the research problem or question (Yin, 1989 and Ghauri *et al*, 1995). Other factors that influence the choice of the research methodology are the nature of methods for collecting the data, the skills of researcher and availability of time and funding of the research. Given the fact this study is to explore knowledge management processes and important factors in the public sector organizations, it was conceived as a two-stage research design.

The first stage was positioned as an exploratory or formative research study (pilot study, see section 5.2). The main aim of this study was to give the researcher first-hand information on how knowledge management is perceived and implemented in the public organizations. Secondly, the information gathered was used to inform the next stage of the research, which entailed an in-depth case study of a public organization. Therefore, a flexible method was essential to tap the context (and details) of how public organizations are striving to manage knowledge. As per Kohli and Jaworski (1990), this researcher uses discovery-oriented interviews – where both semi-structured and unstructured interviews are conducted with the public organizations.

4.7.3 The Nature and Choice of the Case Study

Yin (1989) defines a case study strategy as:

An empirical inquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between the phenomenon and context are not clearly evident, and in which multiple sources of evidence are used (p.23).

Thus, a case study enables the researcher to study in-depth a particular phenomena and the context within which it is emerging or being implemented. Eisenhardt (1989), Bell (1993), and identify the benefits of employing the case study method. Eisenhardt (1989)

argues that the case study strategy focuses on understanding the dynamics exist within a single setting. Miles and Huberman (1994) suggest that much qualitative research examines a single “case”, some phenomenon embedded in a single social setting. Yin (1989) further identifies three types of case studies as: exploratory (that answer the “what” question of the research); descriptive (the “how many” and “how much” questions) and explanatory case study (“how” and “why” questions). However, the demarcation among these case studies is not watertight, and they can be combined into a single case study. Furthermore, Yin (1989) further identifies four types of case study designs and these are: holistic single-case study which is a case study that covers a single unit of analysis; embedded single-case which is a case study that investigates a number of or multiple units of studies; holistic multiple case studies that involve studying several cases and each as a single unit of analysis; embedded multiple case design that involves several cases and each covering a number of units of analysis.

In this research, the organization as an exemplar is used as embedded single case. The use of a single case study design is methodologically appropriate as is commonly used in other studies – to mention a few e.g., DeMoranville *et al*, (1999); Clark (1995) study of Pileri Plc in UK, and Ghauri *et al* (1994). According to Ghauri *et al*, (p.93):

A single case is appropriate when a particular case is a critical case and when we want to use it for testing an established theory (and) ... when a single case is an extreme or unique case (or)... when is revelatory. This means that we can observe and study a phenomenon which was previously not accessible and which can provide useful insights.

The case of the organization will meet these criteria. An embedded single case study has been selected as it enables us to compare and to make contrast within the case (Hartley, 1995) of different organizational units of the organization.

Overall, the case study strategy has selected for the following reasons: to enable us to study in-depth a particular and context bound, complex process of implementation of

knowledge management in the public organization. This dynamic and complex process cannot be holistically captured by inherently, highly selective quantitative methods such as surveys and experiments (Lee, 1999; Stake, 1995). This study will subject statistical generalization emerging from the study to further analytic qualitative study/generalization; to enable us to study the context and emerging process (Yin, 1989) knowledge management and thus allow us to build emergent themes (Eisenhardt, 1989) of development of knowledge management framework in the public organization; to enable us to use method triangulation or multiple source of evidence (Lee, 1999; Gill and Johnson, 1997; Ghauri *et al*, 1995; Creswell, 1994), and hence provide multiple perspectives of the development of knowledge management and at the same time increase the validity of the study. These are (1) significance – the case should have theoretical and public significance; (2) completeness – the case should provide a holistic or wholesome picture of the issues under study; (3) consideration of multiple perspectives; (4) provision of sufficient evidence to enable other people to make their own informed judgment on the findings of the case and (5) sensitivity and respect to research participants – “the co-researchers”. It is believed that these criteria of validity will be met in this study of the public organization; to enable us to capture the phenomena under study from the perspective or frame of reference of actors in the public organization (the organizational employees’ perspective). This is mainly through the use of interviews.

In this research, China Customs, a government agency that supervises and manages all arrivals at and departures from the Customs territory of the People’s Republic of China with over 48000 staff (details see section 5.5.1), has been chosen as a whole for the case study for its organizational size and its importance of and impact on the Chinese economic and political reforms and it meets the requirements for a case study (Ghauri *et al*, 1994) and ease of access (Yin, 1994), which is accessible and is also considered manageable. The real case has been chosen to be conducted in one of the Customs regions in China Customs because it appears that what the region has been engaging in fits more with the concept of knowledge management under the study, especially under

the name of risk management and operation manual and procedures in the region. The name of the Customs region is not revealed in order to protect the respondents in the region. Respondents were selected from the General Administration of China Customs and various Customs regions and Customs houses according to the functions and tasks in China Customs and all the respondents were selected from managers or equivalent at the lower, middle and senior management level. This is because knowledge management is a new subject in China and the frontline staff have little knowledge of the concepts and practices of knowledge management.

In qualitative research, samples are not meant to represent large populations (Miles and Huberman, 1994; Sale *et al*, 2002; Reid, 1996). Purposeful samples of more than forty interviewees were selected who were given flexibility to discuss the issues as they liked to proceed.

4.8 Source of Data and Methods of Data Collection

4.8.1 Source of Data

During the second-phase the study, secondary and primary data were collected both within and outside the organization. Secondary data were collected from multiple documentary sources – both published and unpublished – on the overall context of changes that were taking place in the public sector. Similarly, more background information was collected on the organization's vision, mission statement, organization and operations.

Primary data was collected through both the pilot (see both section 4.7.2 and 5.2) and substantive field research. The pilot phase of the study was used to develop and test the research instruments. Both individual interview and a focus group were used for this purpose. The substantive field research used a combination of research techniques such as, interviews, observations, and documentary analysis.

The main research techniques used as part of the method triangulation were: Personal interviews (face-to-face interviews) – semi-structured interviews were conducted with top, middle managers and. The semi-structured interviews were used to enable us to ask the same questions to different respondents, but at the same time allowing for flexible and in-depth probing into different issues; Focus group interviews/discussion – A focus group interview were conducted at one of the units to discuss practices and how the organization is going about adopting, implementing and sustaining knowledge management activities and culture; Participant observation – the researcher obtained permission to observe the organization functions during the research period at the organization. This method was used to enable the researcher to capture the natural behavior of the organization employees and to verify the truth of statements made by respondents in interviews and questionnaires; Documentary analysis – various documents and reports within and outside the organization relevant to the research problem were examined. Both passive and active participant observation were used for the study. The details of the above methods are discussed in the next section.

4.8.2 Methods of Data Collection

Interviews

According to Fontana and Frey (1998, p.47) “interview is one of the most common and most powerful ways we use to try to understand our fellow human beings”. Hussey and Hussey (1997), King (1995), Edwards and Talbot (1994) support the same views. The major role of research interview is to obtain relevant information from the perspective of the interviewee (Easterby-Smith *et al*, 1999; King, 1995; Ackroyd and Hughes, 1992; and Stone, 1984) or from the “voice of participants” (Edwards and Talbot, 1994, p.86).

An *interview* is defined as a social encounter that involves the interaction of the researcher and respondent where the former asks the latter a number of questions related to the topic under investigation (Ashworth, 1997a; Wilson, 1996; King, 1995); Jones, 1993; and Ackroyd and Hughes, 1992) Essentially, an interview process,

according to King (1995, p.18), involves four major steps: defining the research question; creating the interview guide; recruiting participants; carrying out the interview. But in practice, three additional steps are essential to complete the process and these are transcribing the interview, qualitative data analysis (Huberman and Miles, 1998 and Miles and Huberman, 1994) and writing the interview report.

Types of Interviews

One way of categorizing interviews is based on the way they are conducted, which may include personal interviews, telephone interviews and computer interviews. Interviews can range from structured to unstructured interviews – the semi-structured interviews being in the middle of the two. Structured interviews involve the use of a set of predetermined questions and the interviewer has to ask them in the exact form and order prescribed. With unstructured interviews, the interviewer has greater freedom in formulating and ordering the questions and even asking new questions. However, an interview guide with a number of salient questions and issues to be investigated guides a semi-structured interview. But the interviewer is given flexibility in wording and ordering the questions asked (Erlandson *et al*, 1993).

In this study, personal or face-to-face semi-structured and unstructured interviews were selected to be conducted within the case organization. Telephone and computer were ruled out because of (1) the costly telephone services (2) the fact that not many respondents are used to them and (3) that not all respondents may have adequate computer skills or have their own computers. The semi-structured interviews were the main technique to be used. An interview guide to be used flexibly during interviews was prepared in order to focus the research on main issues and questions.

Rationale for Selecting the Interview Approach:

The rationale for using a semi-structured interview is to seek deep understanding of the behaviors, attitude, actions, opinions, impressions and experience of human beings from their own frame of reference (Fontana and Frey, 1998; Ackroyd and Hughes,

1992).

The interview approach has been selected because it is regarded as the best technique to enable the researcher to understand deeply-rooted behavior, actions, opinions, impressions and experience of human beings from their own frame of reference (Fontana and Frey, 1998; Ackroyd and Hughes, 1992). Similarly, interviews enable the interviewer and interviewee to interact with each other and thus share their experiences and at the same time enhance their understanding of the topic at hand (Jones, 1993; Ackroyd and Hughes, 1992). As a result “data is a co-product of the researcher and the researched” (Ashworth, 1997a, p.24) and therefore data that is gathered is much richer (Hussey and Hussey, 1997, p.56). Another reason for the selection of semi-structured interviews is its flexibility – enabling a researcher to word and order the questions as may be dictated by prevailing circumstances rather than being restricted by very specific or structured questions (Hussey and Hussey, 1997, p.127). Other benefits of using a semi-structured and unstructured interview are: they enable the researcher to cover topics that he/she is interested in more depth; new ideas, topics, questions, perspectives discovered within the context of the study may be pursued or probed. They can be used to complement other research methods and hence enhance deeper understanding of the phenomena under study.

In addition, Ackroyd and Hughes (1992) mention the following *benefits of interviews*: it offers vast mass of information from respondents; allows further probing and seeking clarifications; can be used to study sensitive and complex issues and data generated can be analyzed by using qualitative analysis, and therefore increases better comprehension of the phenomena under study.

However, semi-structured and unstructured interviews might have *weakness* that the researcher needs to consider when collecting data. These include: the fact that questions are not standardized and might be asked in any order might make the comparison of responses of different interviewees difficult (Stone, 1984); respondents, if not

controlled well, may ramble and waste time in answering pertinent questions; possibility of getting socially acceptable responses instead of respondent actual views (interviewee bias). This problem is summed by Ackroyd and Hughes (1992) as “people often do not do what they say, they will do or have not done what they report have done” (p.111); interviewees may not be conversant with the subject. Sometimes they may give inaccurate account or may have problem of memory (may not remember things correctly). In extreme cases, interviewees may not be reliable (deception) or honesty, or they may be “difficult” interviewees; the opposite problem is possibility of interviewer bias where an interviewer might impose his/her own preconceptions or perspectives on the respondent by not wording, asking questions or recording responses properly; taking notes during interviews might result in loss of attention, elongating the duration of the interviews, omission of essential data and not capturing adequately respondent’s perspectives. This might compromise the quality of data (Edwards and Talbort, 1994); given its inherent flexibility required in conducting semi-structured or unstructured interviews – this requires a high level of skill on the part of the interviewer in order to generate reliable and valid data (and to avoid the problem of interviewer’s bias); the interview method is time consuming in terms of planning, conducting, transcribing and analyzing the interviews; data overload is a main problem when many interviews are conducted. This is unusually complicated or make it difficult to analyze the data, particularly if data is not properly recorded, sorted, stored and coded or categorized (Huberman and Miles, 1998; Miles and Huberman, 1994 and Riley, 1990).

Access of Interviewees and Ethical Consideration

One of the major issues in planning an interview is the choice of interviewees. This decision involved the selection of key actors or participants who are conversant with an issue to be investigated. In order to access and elicit full co-operation of interviewees, personal and an official induction letters were used. Similarly, the following access issues were immediately addressed as recommended by Fontana and Frey (1998), Hussey and Hussey (1997), King (1995) and Stone (1984): detailed introduction of the interviewer is done; what the purpose of the interview is. The interviewees were told

specifically that the interviews would be conducted as part of a PhD research/study and the organization would get a copy of the final thesis; why the interviewee is chosen; duration of the interview. Most interviews were of the period of between 60 to 120 minutes; Confirming/reconfirming (and even rescheduling) appointment (date and time). Sometimes, it was necessary to reschedule the interviews, given the interviewees comments within the organization such as attending meetings and other unscheduled events; assuring confidentiality and anonymity to all interviews. Interviewees were specifically told that their identities would not be revealed in the thesis or ultimate documents; seeking permission to use a tape recorder. Generally, interviewees were very co-operative and forthcoming in their responses; seeking permission to present generated data as part of Ph.D. thesis (without disclosing the identity of the informant). This was explained quite clearly as part of explaining the purpose of the research and assurance of anonymity; understanding the interviewee and his/her interests. The researcher sought to understand the educational and working background of each interviewee; building rapport. The researcher has made some effort to build rapport with interviewees.

The aim of all these measures is to ensure full co-operation, trust and confidence of the interviewees. This is essential to encourage the interviewees to talk openly and in greater details about their activities, opinions, beliefs, impressions and experiences without fear that their identity may be revealed.

Similarly, some ethic concerns were addressed and taken into account on initial access to the interviewees, and during and after the interviews (see, Fontana and Frey (1998); Hussey and Hussey (1997); and British Sociological Association (1993). Hussey and Hussey (1997, p.38) singled out the following considerations to be of utmost importance: confidentiality/anonymity; informed consent; dignity and publication. Interviewees were assured that: (1) total confidentiality and anonymity will be maintained. Efforts will be made to ensure that the information that they will give does not identify them and (2) the taped interviews will only be accessed by this

researcher and his supervisors and examiners, whenever that might be required.

The second ethical issue that was addressed is “informed consent”. The interviewees were told categorically the purpose of the research and asked to voluntarily agree to be interviewed. Every effort has been made to ensure the dignity of interviewees is maintained, that is, they are not embarrassed on issues that this researcher may have different views with them or that they do not want to disclose further information. Finally to meet the publication consent requirement, the interviewees’ permission was sought to use interview quotations and data in the thesis without revealing their personal identity. The rationale for taking all these measures is to ensure that the interviewees are protected from any harm (Fontana and Frey, 1998 and British Sociological Association, 1993).

Observations:

The second method has been used as part and parcel of the method triangulation. The observation method was used in order to assist us to cross-check the authenticity of the statements of interviewees and data obtained from documentary sources. It was used to complement the other methods by furnishing us with data that can not be captured by other methods. In addition, the observation method helps us to understand the natural behavior of the observed employees of the public organization. Thus, the observation method enables us to discover what is actually happening in the actual setting of the research.

Observation method has been defined by Marshall and Rossman (1989, p.79) as the systematic description of event, behaviors, and artifacts in the social setting chosen for study”. In our case, the unit of observation is the organization employees at different levels of management and in the organization.

Observations may be unstructured mostly relevant in exploratory studies aimed at enabling the observer to familiarize himself/herself with the situation and “to expand

his or her tacit knowledge and to develop some sense of what is seminal or salient” (Erlandson *et al*, 1993). Structured observations are most appropriate in descriptive studies. Similarly, observations can be classified as participant observation and non-participant observation. *Participant observation* is where the observer gets involved in the activities of the group or people that he/she is observing. This enables the observer to get first-hand experience of what the members of the group are experiencing. However, observations can be *non-participant*, in which case the observer is not involved in the activity of the group he/she is observing. The observer maintains a detached stance-making non-obtrusive observation. Meriam (1998), as quoted in Erlandson *et al*, (1993) recommends that the following aspects need to be observed:

- The setting: What is the physical environment like? What is the context? What kinds of behavior does the setting promote or prevent?
- The participants: describe who is in the scene, how many people, and their roles. What brings these people together? Who is allowed here?
- Activities and interactions: What is going on? Is there a definable sequence of activities? How do the people interact with the activity and with one another?
- Frequency and duration: When did the situation begin? How long does it last? Is it a recurring type of situation or unique? If it recurs, how typical of such situations is the one being observed?
- Subtle factors: Less obvious but perhaps as important to the observation are: informal and unplanned activities; symbolic and connotative meaning of words; nonverbal communication such as dress and physical space; unobtrusive measures such as physical clues; what does not happen – especially if it ought to have happened?

For example, this author went to one of the Customs regions in China Customs and saw the office layouts and observed how staff worked in their office. This author even participated a meeting sponsored by one of the department of China Customs, concerning policy change in processing trade for three days in the region. This author

had the freedom to speak and ask questions whenever he liked.

Documentary Sources:

This is the third method used in the case study to complement other methods. Erlandson, *et al*, (1993) describes this method as referring to “the broad range of written and symbolic records as well as any available material or data”. Therefore, documentary sources include collection of secondary data, published or unpublished. The major problem with the use of secondary or documentary data is *the possibility* that data may be unsuitable or may be inadequate in the context of the problem under study. For this reason, every effort has been made in this study to use both published and unpublished secondary data sources – within and outside the organization so long as they are relevant to the problem. These sources include a combination of official documents, staff newsletters, academic papers, newspaper, magazines and the website of the public organization. For example, one of the interviewees wrote an article published in *China Customs* about how to implement risk management in China Customs. From the paper, the author sensed that they had been practicing knowledge management, but under the name of risk management.

4.8.3 Interview Design

The interview is semi-structured, and a predetermined set of questions are thus proposed, except several interviews conducted with some senior officials were unstructured. Of the total 43 interviews, 38 were completed with middle managers and staff in low rank and used almost the same set of questions. Therefore, the following introduces an interview protocol that shows the interview structure the interviews. The major purpose of using a protocol is to increase the reliability of the interviews so that consistency of the results could be ensured (Yin, 1994). This protocol consists of introduction, background information and seven parts of questions (See Appendix B).

Introduction

In the introduction, the interviewer is reminded to pay attention to the important points,

such as explaining the purpose and focus of the interview; providing some examples to help the interviewee have better understanding of the meaning of knowledge management; stressing the confidentiality of the interview and so on.

Background Information about the Interviewee and his/her Organizations

This aims to remind the interviewer to collect background information about the interviewee, such as his/her name, job title, telephone number and e-mail. Key terms and concepts of data, information, knowledge and knowledge management are also introduced to avoid misunderstanding and confusion.

Part 1: Nature of the Work and Current Situation of Knowledge Management

In this part, three questions are asked about the number of people in the department, the position of the interviewee, and the nature of the work, anyone who is in charge of knowledge management and how knowledge is managed in the organization.

Part 2: Question for Knowledge Acquisition

Also three questions are raised about responsibility of collecting knowledge, knowledge sources and how to find the knowledge needed for the work and availability of educational and training courses.

Part 3: Questions for Knowledge Creation

Three questions are about incentive mechanism and cooperative and collaborative relationship with other departments and outside organizations and the ways how the staff learn and their willingness to learn in the organization.

Part 4: Questions for Knowledge Storage

Four questions are asked about whereabouts of the knowledge, database and information management system, its functions and the use, and retention of the knowledge in the organization.

Part 5: Questions for Knowledge Sharing/Transfer

Also four questions are asked about the knowledge diffusion channels and mechanism and IT and IT training courses, and any problem encountered in the process.

Part 6: Questions for Knowledge Application/Use

Two questions are raised about finding the knowledge and research in the organization.

Part 7: Questions for Enablers for Knowledge Management

Five questions are asked about organizational culture, incentive mechanism, attention to the needs and want of the staff with regards to education and training, and any suggestions about how to carry out knowledge management.

The End of the Interview

These protocols are only used as guidelines for the interviews. Therefore, not all the questions are actually used in all interviews. Instead, some questions are generated spontaneously during the interview as and when necessary.

4.8.4 Selection of Interviewees

The interviewees were mainly selected from the areas of China Customs Beijing Head office, Qingdao, Beijing and various customs officers who are now temporarily working in (borrowed by) the Head office from some provinces, such as Beijing, Fuzhou, Tianjin, Guangdong, Shenzhen, etc. The selection was based on the main criteria as suggested by Yin (1994): convenience, accessibility and geographic proximity (see section 4.7.3). In gaining access to interviewees, strong personal links and Chinese culture of 'Guanxi' played important roles in this study. The author made good use of his personal contacts in China Customs. The contacts include his former colleagues in various Customs regions and China Customs Beijing Head office, etc.

4.8.5 Pilot and Formal Interviews

In order to ensure that question wording is comprehensible to respondents, pilot interviews were conducted. The five interviewees were firstly selected for the pilot test. The test aims to evaluate: whether the interviewees really understand the terminology, such as knowledge management and knowledge management process; whether the questions are clear and easy to understand by the interviewees; whether there are particular areas that may have been unclear previously (Janesick, 1998); whether the interview will effectively work, and the type of information being sought will actually be obtained (Berg, 1989).

The results of the pilot interviews show that the interviewees fully understood the terminology such as knowledge management and knowledge management process; the questions are clear and easy to understand; there are no unclear areas; and the interview can effectively work and the type of information being sought can actually be obtained. However, the questions for the formal interviews were rearranged according to the five knowledge management processes and have been effectively used for the formal interviews.

In spite of most of the interviewees are middle managers and lower rank Customs officers who are very busy with their work, the duration of the interviews is ranging from 90 minutes up to a maximum of 160 minutes, which is considered to be reasonable for in-depth interviews. Forty three interviews were conducted in Chinese instead of English due to language obstacles. All interviews were tape-recorded so as to increase the accuracy of data collection, but not all of them were transcribed due to huge work load and time constraint, only ten are selected and fully transcribed into Chinese and then into English. The final version of the interview transcript in English consists of 101,297 words. However, all the interviews are analyzed on the equal weight through content analysis described in section 4.8.7.

The following table (Table 4.3) contains the information of the interviews conducted in the study.

Table 4.3 List of Interviews Conducted for the Study

Name	Rank/Job Title	Date and Place of Interview	Length of Time for Interview
No.1	Deputy Director Dept. of International Cooperation	05-12-2006 Beijing	135 minutes
No.2	Vice Division Chief General Office	8-12-2006 Beijing	110 minutes
No.3	Vice Division Chief Dept of Enterprise Management	19-12-2006 Beijing	120 hours
No.4	Vice Division Chief Business Dept.	26-12-2006 Beijing	90 minutes
No.5	Division Chief	26-12-2006 Beijing	90 minutes
No.6	Vice Division Chief Business Dept.	16-01-2007 Beijing	120 hours
No.7	Vice Division Chief Business Dept.	20-01-2007 Beijing	100 minutes
No.8	Vice Section Chief Dept. of Control and Inspection	29-01-2007 Beijing	90 minutes
No.9	Vice Division Chief General Office	15-02-2007 Beijing	130 minutes
No.10	Deputy Director	20-02-2007 Beijing	150 minutes
No.11	Division Chief Dept. of Personnel and Education	07-03-2007 Beijing	150 minutes
No.12	Vice Division Chief Dept. of Audit-Based Control	30-03-2007 Beijing	110 minutes
No.13	Vice Division Chief Dept. of Duty Collection	04-04-2007 Beijing	120 minutes
No.14	Division Chief Business Dept.	08-04-2007 Beijing	135 minutes
No.15	Division Chief Sub-Customs	06-05-2007 Beijing	140 minutes

	Administration		
No.16	Division Chief Business Dept.	10-05-2007 Beijing	120 minutes
No.17	Vice Division Chief Dept of Risk Management	28-06-2007 Beijing	130 minutes
No.18	Vice Section Chief Business Dept.	06-07-2007 Beijing	80 minutes
No.19	Section Chief Dept. of Policy and Legal Affairs	25-07-2007 Beijing	90 minutes
No.20	Section Chief Dept of Audit-based Control and Risk Management	25-07-2007 Beijing	100 minutes
No.21	Section Chief Business Dept	25-07-2007 Beijing	145 minutes
No.22	Section Chief Business Dept.	25-07-2007 Beijing	90 minutes
No.23	Section Chief Dept. of Processing Trade	26-07-2007 Beijing	120 minutes
No.24	Vice Division Chief Dept. of Processing Trade	26-07-2007 Beijing	90 minutes
No.25	Vice Division Chief Dept of Risk Management	27-07-2007 Qingdao	160 minutes
No.26	Vice Division Chief General Office	27-07-2007 Qingdao	120 minutes
No.27	Vice Section Chief Dept. of Processing Trade	28-07-2007 Qingdao	120 minutes
No.28	Vice Section Chief Dept. of Personnel and Education	28-07-2007 Qingdao	120 minutes
No.29	Vice Section Chief Business Department	28-07-2007 Qingdao	120 minutes
No.30	Vice Division Chief Dept. of Enterprise Management	30-07-2007 Qingdao	150 minutes
No.31	Director	30-07-2007 Qingdao	160 minutes

No.32	Vice Section Chief Business Department	07-08-2007 Beijing	100 minutes
No.33	Vice Section Chief Dept. of Customs Control and Inspection	07-08-2007 Beijing	90 minutes
No.34	Deputy Director National Information Center	10-08-2007 Beijing	135 minutes
No.35	Deputy Director Dept. of International Cooperation	16-08-2007 Beijing	110 minutes
No.36	Deputy Director General Office	23-08-2007 Beijing	120 minutes
No.37	Vice Division Chief Business Department	28-08-2007 Beijing	130 minutes
No.38	Division Chief Qinghuangdao	05-09-2007 Beijing	120 minutes
No.39	Division Chief Dept of Science and Technology	12-09-2007 Beijing	105 minutes
No.40	Division Chief	21-09-2007 Beijing	110 minutes
No.41	Vice Division Chief Dept. of Customs Control and Inspection	08-10-2007 Beijing	110 minutes
No.42	Vice Division Chief Bureau of Anti-smuggling	15-10-2007 Beijing	100 minutes
No.43	Vice Division Chief Dept. of Statistics	22-10-2007 Beijing	90 minutes

4.8.6 Data Transcription

Once an interview is finished, while the memory is still fresh, it is then fully transcribed and reviewed to ensure its accuracy. Then its content analysis is quickly carried out so that any valid evidences or missing points can be found. If common missing points or problems can be found from several successive interviews, further questions will be asked on the basis of the problems or missing points. Then a new round of interviews will be carried out. This process may be repeatedly progressed until enough valid evidences,

but no further problems, are found. Therefore, transcribing of interview is not just a simple technical task to write down the words onto a piece of paper, it is a creative activity.

In accordance with this, memo notes were also made when ideas were stimulated by re-hearing of the recorded data for each interview. After the transcript was done, the author went back to listen to the recording again to double check whether the conversation was accurately transcribed. If there were no issues, the summary report of the interview was produced for each interview. This summary report includes the general interview information; reflexivity of the interview from both interviewer and interviewee's perspectives etc. Finally, all the relevant documents for each interview: transcripts; field notes; research summary reports; were labeled and filed.

4.8.7 Analysis of the Interview Data

Qualitative method is used to analyze data. *Content analysis* is used to analyze interviews, documents to identify emerging key themes or categories/patterns (Brewerton and Millward, 2001; Bryman, 2001; Hussey and Hussey, 1997). However, although numerous volumes have been published on the techniques of qualitative interview data analysis (Bryman, 2004; Ghauri and Gronhaug, 1995; Miles and Huberman, 1994; Strauss and Corbin, 1998), qualitative researchers still have been known to be overwhelmed with the vast accumulation of data and struggling with finding analytical approaches for these mass data. Obviously, there is no a single, standard approach to qualitative data analysis. No matter what approaches researchers wish to use, they must understand that qualitative data analysis should be creative; strategically and internally consistent.

The analysis of the raw data is very difficult because the data are messy and scattered. The organization of the data into structured, meaningful themes can be approached from two perspectives. A deductive analysis involves arranging quotes into a set of pre-determined categories, whereas an inductive analysis allows the themes and

categories to emerge from the data, rather than being imposed before analysis (Patton, 1990; Krane *et al.*, 1997). The data analysis approach adopted in this study was mainly based on Miles and Huberman's (1994) approach which provided a comprehensive roadmap to qualitative data analysis using data displays in the form of networks and graphs. After interview transcripts are coded, the process of pattern coding began. Codes generated during coding were reviewed for how they could be grouped together into categories. Afterwards, these issues were used to deduce key themes that were common or recurring. This is a rather time-consuming job, particularly as the data is huge.

Data Analysis Strategy

To ensure that data analysis is “systematic, sequential, verifiable, and continuous” (Krueger and Casey, 2000: 128), a three-step strategy suggested by Miles and Huberman (1994, p.10-11) was used for data analysis, which is data reduction, data display, and conclusions drawing and verification.

Data reduction refers to “the process of selecting, focusing, simplifying, abstracting and transforming the data that appear in written-up field notes or transcriptions (Miles and Huberman, 1994, p.10). It is normally carried out for analyzing interview data in the beginning of data analysis in order to organize the messy and scattered interview data into structured, meaningful themes. By adopting the data reduction process, the author produced large number of written notes; memos; narrative extracts, as well as key sentences and important quotations of English translations. During the process, extra great attention was paid to what the respondents said and why their saying was important. Through this process, it was realized that data reduction occurred continuously throughout the whole research process. The author was conscious about this issue from beginning of data collection until final conclusions were drawn and verified.

One important aims of this study was to gather rich data from respondents who were participating in the knowledge management activities. It focuses upon how they managed knowledge in the organization. The researcher is interested in sense-making

of these individuals in co-constructing their experience of knowledge management. Narrative plays an important role in analyzing interview data because people create themselves through narratives (Carr, 1986). In research, it is common for participants to frame accounts into story about themselves. By conducting a narrative analysis, researchers can understand the social world and the narrators' parts in it. Narrative is particularly valuable for individual sense making (Weick, 1979) in this case. On the reading of the transcript of interview data, respondents' personal narratives were interpreted. Interpreting their narratives helped the researcher to develop coding schemes.

A *code* is a label attached to a section of a text. It indexes a theme or issues in the data which has been identified by researchers as important to their interpretations. Coding is also to reduce the text so that text can be displayed in an explicit form for researchers' interpretations (Crabtree and Miller, 1999). Coding is a dynamic and fluid process (Strauss and Corebin, 1998). There is no one correct or ideal way for data coding (Miles and Huberman, 1994; Bryman, 2004).

Defining codes of the interview text started with a preset of initial codes which helped the researcher to guide the first stage of data analysis. The pre-defined codes were derived from three sources: interview protocol; academic literature; the researcher's own international practical experience. These pre-defined codes were created as prior themes that were treated as higher-order codes. By reading and re-reading the interview text, the provisional codes were developed by adding new themes whenever and wherever new themes emerged. During the process, if some interesting text did not fit the exiting codes, then the new theme was created by labeling it at the side of the transcript of interview. Simultaneously, the quotations wherever the new codes were identified were always marked.

After first round of reading and coding completed, re-reading the transcripts and checking the codes, especially new codes, were conducted with extra care. Once next rounds of

reading and coding finished, all developed codes identified from the first interview transcript were listed and these new codes were arranged into the coding pattern. The revised pattern with new developed codes was used as the new preliminary pattern to analyze all interview transcripts one by one. From the initial to final pattern, each individual interview transcript was reviewed very carefully by adding new codes and dropping redundant codes throughout. This process continued until no new codes emerged from the interview text. Then the final pattern resulted with the saturation of this process for this study.

Based upon above constructed initial pattern, the researcher went through systematically the full set of interview transcripts to identify the interview text that were relevant to the research aims. If the text was identified as an issue in the relevance to the research question, but it was not covered by the existing code, it was added as a new code. As an on-going process, all interview data were reviewed and the preliminary pattern was revised by inserting new codes or replacing some of the existing codes till the final pattern was resulted.

Data Display

The purpose of data display is to help researchers defining relationships between themes, and drawing appropriate conclusions. *Data display* is the second major flow of analysis activity. A *display* is an “organized, compressed assembly of information that permits conclusion drawing and action (Miles and Huberman, 1994, p.11). The most frequent form of display for qualitative data has been extended text and these displays can be presented in many types of matrices, graphs, charts and network. There are a few ways that can be employed to display qualitative data. Matrices data display approach can be used to identify relationships between themes (Miles and Huberman, 1994). Taking the form of a table, a matrix normally is employed to summarize qualitative data along multiple dimensions (Miles and Huberman, 1994). Nadin and Cassell (2004) point out that it is impossible to construct a matrix for every category in the final pattern. However, some matrices can be constructed with certain categories in different levels. Borrowing

this idea from Nadin and Cassell (2004), a matrix for some created codes in the pattern was created, which includes the information about: what new codes were added, and what codes are deleted or justified comparing the previous initial pattern; why all these happened; and what quotations from the interview text can be used to support the insertion of new codes or deletion of initially defined codes etc.. In addition to the created matrices, the author also used other diagrams and charts to organize the data diagrammatically, for example, categorizing quotations by looking for 'education and training' underlying of same themes or patterns throughout the interview data.

During constructions of matrices, one key principle was followed in this research: reduce complex information into selective and simplified forms to easily understand configurations (Miles and Huberman, 1994). By doing this, it can be seen clearly what was happening to the interview text that helped the researcher to move on the next step of analysis, drawing and justifying conclusions in an efficient way.

Conclusions Drawing and Verification

Drawing conclusions is the third stream of data analysis activities. From the start of data collection, the qualitative research is beginning to decide what things mean, meaning-making. However, nothing is final until the data collection is over. To get the analysis done efficiently, a mixture of analysis techniques should be used strategically , such as comparisons based on pattern seeking, clustering, etc (Miles and Huberman, 1994). The researcher adopted different approaches to interpret the data at this stage.

At the first place, before any formal conclusions were drawn (a few informal conclusions may be there lightly when the author developed codes or data display), the author looked through all forms of documents which were already conducted during the research such as field notes; codes; research summary reports, etc. It was followed by revisiting the research aims and objectives. By doing this, the researcher tried to build up a full picture and attempted to draw conclusions systematically and sequentially.

Afterward, the author looked deeply at ‘Education and training’ among different interview text; then compared them with the preliminary modes or factors developed from prior empirical studies knowledge management through existing literature. In particular, if differences were identified, the places where these new insights emerged in the original transcript were traced and re-looked at. Then all the relevant quotations were printed and cut and presented on the ground. The general process at this stage was reading the transcripts; thinking about them; studying them; comparing them, and finally concluding them. Logically, the author generated ideas and propositions through the interactive process by moving back and forward amongst the research questions; existing literature; collected and analyzed data.

Conclusions need to be verified as the researcher proceeds. The meanings emerging from the data have to be tested for their validity (Miles and Huberman, 1994). In order to make sure that reliable conclusions can be drawn from the interviews, two members of staff at School of International Trade and Economics, University of International Business and Economics, Beijing China, are invited to code some example quote(s) that are randomly selected for each of the categories. Their coding closely matches the corresponding coding made by the author of the thesis, which means that from the interviews, other researchers can draw the same conclusions as the ones made by this research. Therefore, the quality of the conclusions drawn from this research can be regarded as reliable.

4.9 Chapter Summary

This chapter is subdivided into two parts. The first part of the chapter has discussed the major methodological issues of the research. These issues include the alternative research paradigms, philosophical underpinning of positivistic and subjectivist approaches, the main differences between qualitative and quantitative research, the nature of knowledge generated by both positivistic and subjectivist approaches and the case for triangulation. The second part of the chapter has dealt with substantive issues

of this research. These include the nature of the research design, which in this research is the case study strategy, source of data and methods of data collection and the main data analysis techniques.

Chapter 5 Case Study in the Chinese Public Sector

5.1 Introduction

This chapter will present the key findings of the pilot study in the public sector, surface the support evidences collected from the face-to-face interviews, and triangulate the key findings and support evidences so as to provide more reliable conclusions and richer picture about how knowledge management is practiced and what issues and difficulties encountered in the process and the implementation of knowledge management in the public sector. This chapter begins with the discussion of the pilot study result.

5.2 Pilot Study

As stated in the Cong *et al*, 2007, the pilot study was positioned as an exploratory or formative research study. The main aim of this study was to give the researcher first-hand information on how knowledge management was perceived and implemented in the public organizations. The findings and conclusions of the pilot have provided the information. Secondly, the information gathered was used to inform the next stage of the research, which entailed an in-depth case study of a public organization. Therefore, a flexible method was essential to tap the context (and details) of how public organizations are striving to manage knowledge.

In order to carry out the pilot study and gather information pertaining to the above matters, semi-structured interview was used as the main instrument for data collection. Six interviews as a pilot study were conducted in the public sector between 2004 and 2005. Two each from UK, China (China Customs) and Australia, interviews from Australia were conducted via telephone, with each interview lasting for between 45minutes and one hour. These informant interviews were used to complement the literature review on KM. Given that most of the KM literature derives from the private sector, it was important to

understand the public sector context. Therefore, four of the interviews were tape-recorded and transcribed, and examined using content analysis, and the key themes were identified along with KM strategy, people, organizational culture, technology, and critical factor for implementation, summarized in the findings of the pilot study. As a pilot study, these interviews provide some first hand information as a general understanding of the current situation of KM in the public sector, based on which a case will be chosen and conducted for further study in China (Cong *et al*, 2007).

5.3 Findings of the Pilot Study

The findings of the pilot study are as follows: (1) there is lack of or insufficient awareness and understanding of knowledge management and its benefits; (2) the overall goal of these organizations does not include knowledge management explicitly and there is no organizational arrangement for knowledge management; (3) there is lack of clear strategy to implement knowledge management practices; (4) there is insufficient training and budget for training on knowledge management; (5) there are barriers to effective knowledge management. Both structural and cultural barriers exist in public organizations; (6) knowledge is only shared on a need to know basis; (7) most government departments have implemented web-pages/intranet, using information technology to record data, procedures, and reports and have access to internet, intranet, and email and use them to look for information (Cong *et al*, 2007).

It is widely recognized that public sectors have limited resources, how to use less resources to do more for the public has been a perennial challenge facing the public sector. Necessary investment in information technology is requisite for the successful implementation of knowledge management in the public sector, but technology is not the solution to the problem. What needs to be done is to change people's mindset and the way of doing business and to increase skills and abilities of staff by providing proper education and training in the management of knowledge in the organization (Luen and AL-Hawamdeh, 2001). The feedback from the interviewees has confirmed that main study in the Chinese public sector will provide some empirical evidence in this regard.

5.4 Conclusion of the Pilot Study

Knowledge management as an emergent discipline is fairly new, and its research base is still under development. Despite the vagueness of the concept of knowledge management, and its weak theoretical base, knowledge management is practiced in many organizations, public or private, though largely in the industry. Therefore, more empirical studies need to be done for identifying building blocks of theories and concepts to support the development of new scientific fields (Cong *et al*, 2007).

The findings and conclusions in the pilot study reflect some common topics and have some similarities in the literature and practices in the West. However, what the real situations are, what the issues and difficulties are encountered, and what the unique features are in the Chinese public sector necessities further exploration in these areas to provide further empirical evidences in the Chinese public sector to see how knowledge is managed and what the important factors affecting the implementation of knowledge management.

5.5 Main Study

Based on the background literature and the findings of the pilot study, the information gathered so far is used to inform the next stage of the research, which entails an in-depth case study of a public organization. The case has been chosen as China Customs and Customs region for this study.

5.5.1 Background of the Case Study - China Customs

According to China Customs Today (2006), China Customs is a government agency that supervises and manages all arrivals at and departures from the Customs territory of the People's Republic of China. China Customs exercises a vertical and three-tiered management structure. The top tier is the General Administration of China Customs

(GACC). The middle tier is composed of the Guangdong Sub-Administration of Customs (in charge of 7 Customs regions located in Guangdong Province), two supervising Offices (located in Tianjin and Shanghai respectively), 41 Customs regions and two Customs educational institutions. The third tier refers to the 562 Customs houses or offices under those 41 Customs regions. In addition, it has posted overseas offices or officials in Brussels, Moscow, Washington D.C. and Hong Kong. Its staff is numbered at over 48,000 (including Customs anti-smuggling police).

GACC is the headquarters of China Customs. It is a full-ministerial-level government agency that directly reports to the State Council of the People's Republic of China and manages all the Customs regions nationwide, which reports to it instead of to local government. It is composed of 15 departments and manages 6 directly subordinated service or coordinating functions, 4 associations and 3 overseas rep offices. The CPC Central Commission for Discipline Inspection and Ministry of Supervision stationed the Discipline Inspection Office and Discipline Inspection Bureau respectively in the General Administration of Customs.

According to the Customs Law of the PRC and other relevant laws and regulations, China Customs mainly undertakes 4 essential tasks: to control inward and outward means of transportation, goods and articles; to collect Customs duties, taxes and related charges; to combat smuggling; to compile Customs statistics and handle other Customs matters.

Accordingly, China Customs mainly performs 7 functions: clearance operation, revenue collection, processing trade and bond operation, Customs statistics compilation, audit-based control, counter-smuggling and port management.

The working guideline upheld by China Customs is to “exercise law-based administration, safeguard the national gateway, serve the national economic interests and promote social development”. Its team-building principle is to make Customs personnel “politically

staunch, professional and reliable.”

First, to take promotion of harmonized economic and social development as the starting and end point of China Customs’ work in the new situations and well perform the functions of control and facilitation;

China Customs reviews and evaluates its work in different areas in view of the requirements and results of implementing a scientific approach to development and endeavors to strike a balance between control and facilitation and make Customs work more targeted and more effective in promoting rational and sound development. The specific measures in this regards are mainly as follows:

- To constantly improve revenue collection capacity so as to make greater contribution to the steady growth of national fiscal revenue and promote the steady and rapid development of the economy.
- To find out the orientation of enterprises’ production and operation on our own initiative so as to take targeted import and export facilitation measures, earnestly implement the national tariff reduction and exemption policies as well as encourage and promote accelerated transformation of the current growth mode;
- To intensify the reform of the bond operation procedures, promote the optimization of the industrial structure and commodity mix and boost the constant improvement of innovation capacity;
- To actively carry out regional economic development mentality, promote regional clearance reforms, strengthen cooperation between different Customs regions and boost the harmonized development between urban and rural areas as well as between eastern and mid-western regions;
- To actively conduct extensively cooperation with different social sectors, establish a new partnership with compliant enterprises, resolutely crack down on all kinds of smuggling crimes and violations activities, safeguard economic order and social stability and help build a harmonious society.

- Study in a timely manner and accurately grasp the economic development law at home and abroad, fully implement the second-step development strategy to build a modern Customs, actively promote the Integrate Clearance Project and China E-port Data Center in collaboration with other management and law enforcement authorities at ports, improve the capacity of control and facilitation in a down-to-earth manner and promote the national reform and opening programs towards constant in-depth development.

Second, to take the goal of building a “politically staunch, professional and reliable” paramilitary Customs force with disciplines the fundamental task, and approach Customs team-building work accordingly;

The requirement is to manage, temper and test the Customs force with the philosophy, disciplines and benchmark of paramilitary force. The goal is to integrate paramilitary management with discipline building, grass-roots team building with management team building, capacity and ethnics building with image building. The specific measures are to grasp the fundamental rule of getting Customs heads and deputies synergize, building a solid ideological, political, spiritual, cultural and integrity edifice in the minds of Customs force and doing a good job in education and training as well as in management and grass-roots team building in the new situations, be innovative in creating new and good mechanisms, improve working methods and promote team building work in a multi-faceted way for harmonized development so as to constantly raise the level of Customs team building work.

Third, to deepen reforms, integrate resources and make innovations in order to press ahead with the second-step development strategy of building a modern Customs regime in a coordinated manner;

Proceeding from the overall objectives of Customs reforms and development, China Customs has been constantly making innovations and improvements in its management

philosophy, rationale, regimes, and methods and means and further integrating resources in information, science & technology, people and finance. The purpose of doing so is to prioritize different work in the overall plan, give guidance on specific aspects while pressing ahead in an all-round manner, base reform goals on management resources and coordinate between different departments as well as between different Customs regions in a down-to-earth manner, thus trying to improve the overall results of reforms.

Fourth, to build a harmonious Customs in a multi-faceted manner to realize both internal and external harmony;

China Customs had been intensifying efforts to build a good working atmosphere and external environment. First, we adopt a “people first” approach featured by respecting, training, educating, and caring for our personnel, thus creating a harmonious internal atmosphere with equality and amity. Second, China Customs have paid great attention to maintaining good relations with local governments and related agencies, enhanced cooperation with all social sectors, established a new type of cooperative relations with many import & export enterprises based on mutual trust, taken and improved measures to ensure transparency of Customs affairs and anti-smuggling police affairs, strengthen international and regional Customs cooperation, taken steps to effectively safeguarded the legitimate rights and interests of importer & exporters and related parties, been endeavoring to keep our personnel clean-handed in our work, raised efficiency and endeavor to create a sound and orderly enforcement environment so as to make due contributions to building a harmonious socialist society.

The Second-Step Development Strategy of Building a Modern Customs Regime

China Customs modernization drive began in 1994. In 1998, the GACC made the decision to establish a modern Customs regime and formulated two-step development strategies to achieve the objectives. By 2003, the goals of the First-Step development strategy, which began with the clearance operation reform, had been substantially realized. In 2004, China Customs formulated the Second-Step Development Strategic Plan for the

establishment of Modern Customs Regimes (2004-2010). According to this strategic plan, from 2004 to 2010, in accordance with the requirements of building a modern Customs regime that is compatible with the national mission of developing a fairly well-off society in a multi-faceted manner, adapted to the already developed socialist market economy and integrated with international customary practices and strikes a balance between strict control and efficient operation, China Customs will promote reforms of different Customs operations and the overall reforms comprehensively and in a coordinated manner with the establishment of risk management mechanism as the core element, thus making China Customs a “scientifically-based, progress-oriented, efficiency-focused and integrity-minded modern Customs service.

The major goal of establishing a risk management mechanism is to build China Customs into a “smart Customs” and comprehensively raise Customs management level by gradually establishing a risk management mechanism that covers all areas and different levels of Customs work in accordance with the requirements of “scientific methods, advanced means, accurate identification, fast response, close coordination and effective management” (China Customs Today, 2006).

5.5.2. Selection of Case and Respondents

Literature review shows that currently the process of knowledge management, especially knowledge sharing, is receiving much attention, but there has been very little empirical investigation into it, even less in China. Because this study is to investigate issues and difficulties in the process and implementation of knowledge management in the Chinese public sector and to the best knowledge of the author, there is no empirical study that has ever been done in the sector up to date. This is important because public organizations do not really know what they must do with knowledge management in real terms. Knowledge management processes are of vital importance to these organizations. For these organizations handling knowledge management adequately is essential to their policy making and service delivery to the public. Therefore, in this study the following

research theme is being explored: What are the real situation knowledge management practices in the Chinese public organization? What difficulties the public organization encounters in handling knowledge management? Which problems in the field of knowledge management is the public organization facing? How do the organizations deal with these problems? And what recommendations can be made to prevent and solve problems in the field of knowledge management?

5.5.3 Procedure and Instruments

Data collection was undertaken by the pilot study followed by semi-structured interviews, going deeper into the subjects most relevant for this organization. The aim of the pilot study was to get a quick scan of what was taking place in the organization in the field of knowledge management and to test research instrument. The pilot study also served as preparation for the interviews.

Interview questions were classified and asked on the basis of the knowledge management process: knowledge acquisition, knowledge storage, knowledge sharing, knowledge creation, and knowledge application and use. Important factors such as organizational culture, organizational structure, and knowledge management strategy, education and training, reward system, and information technology (IT infrastructure) for knowledge management were also included in the questions. The aim of these interviews was to further examine the most relevant issues the public organization experiences in the field of knowledge management. At the same time the interviews attempted to examine which activities are undertaken in organization to optimize the process of knowledge management. The subjects in the semi-structured interview had been formulated beforehand as an interview protocol.

5.6 Chapter Summary

This chapter has presented the key findings and conclusions of the pilot study in the

public sector. It has provided a richer picture about how knowledge management is practiced and what issues and difficulties encountered in the process and the implementation of knowledge management in the public sector. Based on the literature review and the result of pilot study, an in-depth case study of a Chinese public organization will be carried out.

Chapter 6 Discussion

6.1 Introduction

This Chapter first provides the response on perception and understanding by the informants of knowledge management in a public organization, China Customs. Forty three interviews within China Customs, all of which have been used for data analysis, have been conducted between December 2006 and October 2007 in China Customs to collect first-hand information about issues in the knowledge management processes and important factors that may influence knowledge management in China, with each interview lasting between an hour and two hours. The data gathered from the these interviews provide some first-hand information as a general understanding of the current situation of knowledge management in China Customs, which may more or less represent the real situation and progress of knowledge management in the Chinese public sector. Then, discussion and analysis are made on the framework developed from literature review and interviews conducted in this study as shown in Figure 3.3 in Chapter 3, starting from the most common activities of knowledge management processes, followed by six important factors identified and verified by this study. Finally, conclusions are drawn in the end.

6.2 Perception of Knowledge in China Customs

During the interview, the author asked the respondents to rank knowledge by importance. The respondents replied with different answers due to their special area of work in China Custom.

In case of China Customs, different department has its own emphasis and requirement for knowledge. Each department needs special knowledge to deal with its particular area of business. Generally speaking, a majority of respondents agreed that knowledge about

Customs laws, rules and regulations, and government policies ranked first by importance in their duty of work. This is due to the nature of work in which they are engaging. It is their duty to enforce and implement national laws and government policies. Knowledge about commodities, enterprises and international business and trade come the second. In the third place is the knowledge about their area of business. Knowledge about their own area of business depends on which department they work. For example, those who work in the Department of Duty Collection have to know about tariff clarification and evaluation; those who work in the Department of Processing Trade and Customs Bond Operation have to be equipped with knowledge about enterprises, commodities, and processing trade policy. Respondent No. 25 works in the Department of Risk Management of the Custom region and he has been doing the analysis of risks regarding the enterprises and trade so he said that *“what concerns us most is the knowledge about the industries and trades. These are the knowledge we need most”*. It is the most important knowledge for him or for his department. Right after this one, he commented *“it is the knowledge about trade rules and trade information”*. It is the knowledge about tools and methods, quantitative methods used in statistics and sampling. He also thought *“what we need most is the quantitative methods for analysis and application of mathematic tools to the analysis”*. The next one, he told, *“it is the knowledge about how to calculate the resources and costs in the administrative process”*. The reason why the above-mentioned knowledge is very important, as he explained, it is only because *“it is the focus of our concern and is needed badly for the management and accurate control of market economy”*. The respondent concluded that

The overall knowledge depends how one sees them because every functional department can only manage knowledge from its own business operational point of view. For me all the knowledge is raw material and I integrate them from the point of risk management. I only take the issue into account from the point of comprehensive risks, while the Department of Document Verification manages them from the point of verification standard procedures and process. This could be different in focus.

Respondents No. 12, 17, 20, and 30 agreed with his ranking of knowledge by importance and comments because they all have been doing or used to do the work of risk

management in their Customs regions or Customs house.

6.3 The Knowledge Management Process at China Customs

Knowledge has always been a central resource of the government (OECD, 2003). Government use information and knowledge to make the informed decisions regarding public policy and provide services to the public. Therefore, effective functioning of government relies on effective acquisition and sharing of knowledge. In this sense, public organizations are knowledge-intensive organizations indeed (Mercer *et al*, 2005).

In China Customs, GACC is responsible for drafting laws to be ratified and enacted by People's Congress of China, and making rules and regulations policies in the business of Customs administration and management and the Customs regions are required to enforce and implement them. During the process, China Customs is collecting information and knowledge and use them to make informed decisions and to provide services to the enterprises and the public.

In this section the results are structured on the basis of the various phases of the process of knowledge management: knowledge acquisition, knowledge accumulation, knowledge dissemination, knowledge application and use, and knowledge creation.

6.3.1 Knowledge Acquisition

China Customs is a large organization with different Customs regions nationwide and no one is responsible for collecting and clarifying knowledge in the organization and no one can provide staff with multiple knowledge sources and content of knowledge. Each department has established in its own way who has which and what knowledge and skills according to its own function.

Organizational knowledge in the public organizations has two major sources: internal

from what the organization it does; and external from what others do (Cong *et al*, 2007). To acquire knowledge, managers and staff have to identify what knowledge is available within the organization and what knowledge they need. The tools that are used to identify knowledge are knowledge mapping and audit (Davenport and Prusak, 1998; Wexler, 2001; Driessen *et al*, 2007). If knowledge does not exist in the organization, then they have to acquire from outside organization.

Internal Knowledge

The process of identifying internal knowledge needs to be based on sharing and exchange. This requires awareness inside the organization of what it does and the impact of what it does. However, public organization managers and staff are generally not aware of what other people do in other parts of the organization (Cong *et al*, 2007). Therefore, the issue is how to identify them. To do so requires a systematic method.

For example, the following is how a Customs region in China Customs has been collecting knowledge of risk point in the knowledge management of risk through risk management. Respondent 25 explained

What we have been doing is that, first we collect risk point from routine work and followed by risk analysis. Risk analysis is divided into two categories: general and special risk analysis. The categories are used to distinguish from the risk to see whether it is a general or sporadic event and then different treatment of disposal of risk is followed.

The process of risk collection and risk analysis, as a matter of fact, is knowledge identification and capture in the process of knowledge management. The method they used for identification and capture is knowledge tree, which is something similar to Customs tariff classified according to some rules and principles of the commodities. However, No. 25 further explained

What it differs from Customs tariff is that knowledge about enterprise is also included in the collection and analysis of risk in addition to the knowledge of commodities in the

management of risk. Because risk has been in a state of constant change as products and commodities do and it can emerge, disappear or disappear temporally. Therefore, managing knowledge of risk is a dynamic process and a knowledge system needs to be established to reasonably distinguish these risks, within a reasonable limit, from those that are already known. Knowledge tree is the method to solve the problem.

Another way of collecting knowledge is to compile a manual/handbook for Customs operational rules and processes for all the staff in the Customs region to follow according to the function and post they may fit in. Experience and knowledge of Customs officers who have been working in the Customs with rules and regulations related to the job have been collected, identified, captured, and recorded in the manual. The knowledge is explicit knowledge or tacit knowledge that has been converted into explicit knowledge. It is easy even for a new recruit to read and learn to work in the performance of duty in the particular area of work. It is called “handbook management” in the region, according to respondent No.31.

In essence, handbook management, respondent No. 31 explained

is just a management that starts to build basic operation quality system. The function of the Handbook is that it tells Customs officers what their duties are, how many process there are in the operation, what every operation are in the process, what the key points are, and then what the standard are set up. The whole process is to build up quality management in China Customs, the knowledge in the manual is nothing but a carrier, in the process that follows, and an integrated system of clearance law enforcement will be established.

However, to accomplish the task of this nature, more resources such as necessary budget and manpower and leadership support are needed. However, limited resources are not uncommon phenomenon in the public sector (McNabb, 2006). Some respondents expressed their hope to have more budget and leadership support to manage knowledge in the organization.

External Knowledge

The public organizations also seek and acquire knowledge from elsewhere outside the

organization by learning from ‘best practices’ and from working in partnership with other organizations on joint projects, thus focusing on bridging the gap between the existing and needed knowledge (Cong *et al*, 2007).

China Customs acquired knowledge from their foreign counterparts as well. The typical example is that they learn from U.S., Australian, and Holland Customs by adopting the concept and practice of risk management and applying it to the Customs work. In the Customs region under study, they have been doing risk management, starting from the concept introduction/building since 1996 and have gained some practical experience in doing risk management and also gained quite a good deal of risks that have been collected from the years of practicing in the past few years, the perception of the risks which include what type of the risk is, what object it involves with, which stage it emerges in the Customs work, what the perception of its characteristics by the Customs officers and how to handle it in the future. This is what they called “knowledge management system of risk point”.

In addition, they also learn new things and knowledge by inviting experts from outside to give lectures on specific skills and knowledge and by cooperating and collaborating with companies and universities to train staff in order to acquire knowledge they need. For example, respondent No.25 told the author that

“We often invite some experts from the enterprises and the industries to help them do the analysis, borrowing outside brains to renew knowledge. When we do the analysis of freight, we invite the experts from China Ocean Shipping Company (COSCO) and China International Marine Container (CIMC) to give lectures on the subject. When doing the classification for electronic and mobile phone chips, we invite the experts from Haier and Hisense company respectively, first by asking the expert from Haier to explain things that they do not quite understand and then the experts from Hisense. After listening from both sides by comparing explanations we can fully understand what we have talked about and the heart of the problem can be easily found”.

According to respondent 36, inviting experts from outside the organization to acquire knowledge is a normal practice in GACC, especially for the secretaries to the General

Commissioner and Deputy General Commissioners. The author had the experience of this by giving them a lecture on knowledge management.

In addition, they also acquire information and knowledge online. A budget has also been allocated with support of the leader to purchase useful information from the internet, which enables them to find the knowledge they need in the shortest time. They can pay for the information and knowledge such as special analysis report they need in a particular area, saving their time for the study and avoiding “reinventing the wheel” according to respondent No. 25.

6.3.2 Knowledge Accumulation

People’s heads have been and will always remain the natural repositories of knowledge. However, people and organizations can forget, therefore remembering is a crucial element of knowledge management, which requires developing an organizational memory (Walsh and Ungson, 1991; Olivera, 2000).

Since tacit knowledge resides in the head of people, these knowledge leave with them once they leave the organization. Respondent No. 25 commented

“We solved the problem in the following ways:

First, taking collection of risk point for example, we have a system for collecting risk point and a system for analysis identification. When a frontline Customs officer has found a risk point, he/she will have to write a report as to why he/she has to do the analysis. Normally the officer does not have the right to check any lot of the cargo he intends to. He/she will have to write a report about the risk when he deems so. Once the report is written up, it has been recorded in the computer system in a form of a risk identification sheet. When the risk point is successfully established, then it can be taken over by the department of risk management to see if it exists in a smaller or larger area so we will issue a computer warning directive about the risk point, which is followed up in the entire Customs region depending on its seriousness. Second, we will build a system of case study, which is summed up and extracted by the officers. Third, we have a risk point knowledge base of enterprise and commodity, all these risk points are recorded and put into the knowledge base. However, it is not effective as expected

according to the respondent because lack of an effective incentive mechanism. The culture of hoarding knowledge does exist in the mind of Chinese people and they do not have a strong desire and intention to share knowledge with others. For example, those who investigate a case are normally not willing to tell the analyzers how they have done the investigation. This needs to be solved by an effective incentive and reward system”.

His comments have been confirmed by respondent No. 31 and 30.

At present they are trying to extract knowledge from the experts and staff working on the frontline and put it into repository by building a knowledge tree first to deal with the problem of loss of knowledge when people leave the organization or rotate their jobs because they realize that there is no other better alternative.

Explicit knowledge or tacit knowledge such as experience of staff is converted into explicit knowledge and then is put into a manual or handbook for operational procedures represents another form of storage of knowledge. There are many things that are collected and accumulated from the experience, through which a group of experts are formed. The experts provide some guidance on how to do the work step by step. The manual so compiled can be passed on and on. The manual has been updating all the time by the functional department such as Risk Management. Therefore, the updating and maintenance of the manual is actually a process of collecting operation knowledge. What the Customs region under study has been doing the work all the time by publishing the manual or handbook on a yearly basis, but not in a large volume. An electronic version of the manual is also on their Intranet for the benefit and convenience of easy revision to keep up with the policy change in the work.

What needs to be noted is that tools and approaches to acquire different form of knowledge in the organization should be known to the staff and there is no single approach that can provide a comprehensive solution to knowledge capture, sharing, and storing. Organizations have to use different tools and approaches to retain different form of knowledge. Consequently, a variety of tools and approaches are used to acquire

different form of knowledge. Zack (1999b) has proposed two IT applications tools: integrative (people-to-document for explicit knowledge) and interactive (people-to-people for tacit knowledge). Similarly, Hansen *et al* (1999) have identified two approaches: codification (people-to-document for explicit knowledge) and personalization (people-to-people for tacit knowledge) (Cong *et al*, 2007). (Relate to data collected)

The Customs region is using different tools and approaches to obtain explicit knowledge through people-to-document and acquire tacit knowledge through people-to-people approach.

6.3.3 Knowledge Sharing

Knowledge abounds in organizations, but its existence does not guarantee its use (Davenport and Prusak, 1998). To be qualified as transfer, both transmission and absorption are required. Knowledge transfer will not take place unless knowledge is transmitted and absorbed and used by the recipient. Real internal knowledge transfer is a people-to-people process (particularly for sharing of tacit knowledge) and usually requires enlightened behaviour. Therefore, spontaneous and unstructured knowledge is critical to an organization's success in an organizational knowledge management initiative. It is essential to develop specific strategies to encourage such spontaneous exchange, a knowledge sharing culture with the support of leadership (Crawford, 2005; Cong *et al*, 2007; Singh, 2008).

Knowledge sharing of management of risk knowledge follows its own system in the Customs region under study. The region has been doing knowledge management of risk point as a pilot project for a few years already and is best in this area in China Customs judging by the achievement so far. However, it will make more sense if the system can be transferred to other Customs in China in terms of knowledge sharing and application. But at the present stage the region is just getting management system of risk point roughly into shape as they do not intend to rush things by developing the system into a very

complicate system because it is still a new thing in China and the region prefers to start from a simple system to increasingly accumulate knowledge in the area. Building up such a knowledge system such as knowledge tree will not be accomplished within a time span of 3 to 5 years and it will take a huge human effort to do tremendous amount of complicate research works, such as knowledge classification and verification. Now the region has come to understand that knowledge management exactly tells the functional management department of risk management in the region where knowledge is and wisdom lie in the organization. According to respondent No. 25,

“it lies in their ability to build up the knowledge tree and to guide people based on the knowledge tree to share knowledge and experience and fully use knowledge in the organization”.

Training strategy is a part of knowledge management (Hwang, 2003). Job training and education is another way of sharing knowledge in the region under study. Job training could either be new staff training or on-the-job or off-the-job training. New staff training provides general knowledge of what the mission, aims and objectives of the organization are and what the organization does, etc. On-the-job or off-the-job training could be more related to the job that the staff is doing and this can be done either within or outside the organization through seminars, workshop, and conferences. Respondent No. 27 explained that

some of the training courses only invite those who are holding the position of section chief, so they can disseminate knowledge to their staff when they are back in order to build the team. Staff can also be sent to study a particular subject in the universities that are in collaboration with China Customs or Customs regions. Every year there are some quotas to study in the universities which are assigned from GACC to Customs regions and Customs regions have their own quotas to send staff to study in the local universities as well. However, the quotas are limited in number and only those who perform best in the work will be chosen”.

Respondent No. 28 further commented

I wanted to apply for it but I gave it up eventually because I found out that I was not qualified to go for not being the outstanding people in the work, but I had not attended many trainings since he joined the Customs in the last ten years.

In the Customs region the training is done through both in-house training class and online learning. Studying and following the manual is one way of in house training because it is a standard way of doing things in the region and knowledge sharing is taking place during the process. However, just following the manual is not enough because there are some skills also involved in the work. Taking Customs valuation as an example, Customs valuation is a work that needs highly professional expertise. Take a glass mug for example, there is a system for Customs valuation to decide how much a glass is and to see if the value declared by the enterprises is correct or not. Therefore, simply by following the procedure strictly by the manual, one may not do the work well. Skills is needed in the procedures and steps in the valuation and such skills cannot be acquired easily and it needs long time work experience in the field of valuation, which also needs to be shared with new staff. These skills and knowledge are shared through training programs. Respondent No. 31 explained that

The lecturers are very experienced staff in the region and they teach new staff how to establish Customs valuation of a glass for an example. First, the lecturer will tell that the valuation has to be carried out strictly in accordance with valuation steps in the rules and regulations of the state, step by step. Second, he or she has to pass on know-how or experience and some technical skills, just like what has been done in handling a criminal case in the Bureau of Anti-Smuggling, who try a case in almost the same way as in the Public Security Bureau in accordance with the formalized standard procedures. However, someone can get something out of the trial, others cannot.

This is because tacit knowledge exists in the trial process in which the interrogator changes his or her strategies or tactics according to the answers by the suspected any time during the interrogation. This tacit knowledge is obtained and realized from experience, not written in the books because no book will provide a set formula for interrogation.

In terms of conversion of tacit knowledge into explicit knowledge, respondent No.31 explained

“for us it means how to realize accumulated knowledge and pass them to and share with others. We have been doing this through training. In every post of our work, we choose the best people to be teachers as a part-time job. We have about 20 training classes every year and teachers are very experienced officers chosen from inside the region and they have the obligation to undertake the teaching duty, giving lectures in the class. In addition, we also an online learning platform, those who do not have opportunity to be trained in the class can use the platform to study the content of the lectures and teaching plans online. We use this method to disseminate and share knowledge.”

Respondent No. 11 and 10 confirmed that this is also the practice in use in their Customs region.

During the interview when question of knowledge sharing was asked, it is very interesting that respondent No. 25, the Division Chief of the Department of Risk Management, said *“the projector in my office is the carrier of knowledge sharing because the projector is the most frequently used tool in our meeting for discussion of issues arising from the work”*. The Department of Risk Management is a newly established one in the organization, dealing specially with risk management and risk related issues, which are all new to them. Therefore, they have to sit in the office to express their views and discuss them over before a solution comes into form. When a new issue arises in the operation and performance of duty and they are back for discussion and analysis, and then new solution is found again. The process cycles over and over. The respondent thought that most useful place in his office is the conference table and most useful tool is the projector. In this sense he believed that it is one way of knowledge sharing in their department. What he really means, to the author’s understanding, is that formal meeting, discussion of work issues related to problem solving is an effective way of knowledge sharing (Davenport and Prusak, 1998).

Another effective way of sharing knowledge in the Customs region is to embed

knowledge in the daily work activities. As mentioned earlier in the section 5.3.2 knowledge accumulation when risk point is found, the frontline staff has to write a report about the risk and the reasons why it is deemed as a risk for further analysis by the Department of Risk Management in the region before it is established as a risk and risk warning issued. The content of the report contains the context of the event, such as details of what, where, when, and why of risk event, which can be disseminated to all the staff after it has been stored in the computer system as a knowledge base to be shared with others. The disadvantage is that the officer may not be willing to tell the analyzer by hoarding the knowledge of how he/she did the investigation for fear of giving up knowledge to others, hence losing the power. This is the barrier to share knowledge in the organization and it proves that embedding knowledge sharing into work flow is neither quick nor easy. It requires cultural change and policy change in human resources (HR) in the organization (Oltra, 2005; Svetlik, 2007). Therefore, knowledge management can have a direct impact on the strategic management of human capital.

Mentoring and coach/apprentice training model (Donnelly, 2008) as another way to share knowledge between a mentor and a mentee (or coach/apprentice) is said rather effective for sharing tacit knowledge. Certainly it is also the case in China. Mentoring as a part of training is a typical way to train new recruit in the Chinese organizations. Normally when a new recruit joins in an organization he/she would be assigned to work with a master with years of working experience and the recruit then becomes an apprentice. The master is responsible for guiding and teaching the apprentice how to do work in the area and passing his/her experience and knowledge to the apprentice. The master plays the role of disseminating, assisting, and guiding to the apprentice. Most respondents (No. 10, 1, 11, 14, 35, 29, 16, 24 and 26, etc.) agreed with this. However, two respondents did not think the system of master and apprentice is not very effective. One of the two respondents (No. 25) cited a study to prove the point that

“seldom is an apprentice getting more famous than his master and knowledge becomes attenuated from generation to generation. This is because every master always keeps

the best part of knowledge only to himself in case the apprentice exceeds him."

The other respondent (No. 31) also expressed his view by saying

"In the past, before the manual was worked out, largely apprenticeship is used for that purpose. However, it has its pros and cons. The good thing is, as you just said earlier, that all those years of what one has learned and experience accumulated from work can pass knowledge on to the next generation, which could benefit those who has a strong professional dedication and ambitions and can apply their knowledge to business operation. However, years of work practices have proved that another problem that the bad things and habits are also passed on together with the good things, which leads to different standard of business operation procedures. One's master passed on knowledge to him and he passes it on to his apprentices. It goes on and on and year by year, nonstandard operations result in the end". That is the reason why we have compiled the manual to prevent the malpractice brought by oral instruction.

The most simple and typical example is the cook in Chinese cuisine and a master always keeps one or two dishes only to himself and will not tell his apprentice. Knowledge is lost because of it. The other problem has something to do with the apprentice. The organization may allocate the apprentice to the master, who may not necessarily like him/her, especially when he/she is not smart enough. Under the circumstance, the sharing of knowledge is confined to few people, so it is not conducive to the management and creation of knowledge in the organization. Therefore, the respondent takes a view that the apprentice should act more like a knowledge collector and it would be better if the role is changed.

In spite of the fact that many staff find the sharing of knowledge with colleagues threatening, "People are afraid of losing power and when they give up their hard-earned knowledge." However, respondent No. 23 said that

"sharing knowledge with colleagues strengthens our positions in the organization. For when we share our own knowledge, we are more likely to get knowledge back from others."

Some respondents (No. 37, 24, 6, 30, 22, 41, 25, 33, 19, and 7, etc.) agreed with the

comments. Respondent No. 21 even said that

"I am not afraid others will threaten my position in the organization because I am so confident that my experience and knowledge, especially tacit knowledge, can not easily be duplicated and imitated by others even I share with others."

Nonetheless, barriers to transfer of knowledge do exist in the organization (Riege, 2005; Sun and Scott, 2005). This indicates that people tend not to be willing to share what they know. To change the existing 'knowledge hoarding' culture and encourage people to get involved actively in the knowledge management process of knowledge sharing in government, there are several ways to go about it. One way is to build a formal recognition and reward systems to compensate the knowledge sharing behaviours of the public employees, both for sharing knowledge with others and using other's knowledge, not necessarily in monetary terms. This can be achieved by linking it with annual performance review and promotion (Cong *et al*, 2007).

Communities of practice (Williams, 2008) as a way of transferring tacit knowledge did exist in China Customs. However, CoP basically exists in an informal style and on a small scale. To facilitate the conversion of tacit knowledge to explicit knowledge and learning to take place in the organization, CoP, either in formal or informal style, should be encouraged in the organization.

6.3.4 Knowledge Application and Use

The Customs region under study applies knowledge to commodities and enterprises by building a knowledge tree and risk analysis. Customs revenue in the region exceeds 50 billion RMB yuan every year, out of which 51% revenue are collected from crude oil and mineral products. Take crude oil for example, what are factors that would affect the crude oil? Price is not the only one, of course, what else then? It is understood also that crude oil are all carried by sea, the cost of his mode of transportation (ocean shipping) reaches almost one third of the total prices of crude oil. Then what are the factors that would

affect the transportation? In the transportation business, a shipping company may enter an agreement with its best client; the freight is paid and collected according to a formula to be adjusted on yearly basis with a discount at the year end.

What the Customs officers should do under the circumstance? According to respondent No. 25,

“Customs officers should try to see what is behind the sale contract, not what is in the contract only. In the context of shipping agreement, duty assessment should take into account of freight calculation formula, especially the part of the adjustment made and discount rendered every year. From this they began to understand from this particular occasion that they should not try to think narrowly just from one stage of the import and export in order to know this particular commodity, but to understand the trade process in which the commodity is traded.”

That is the reasons why distinction has been made between general risk analysis and special risk analysis when doing the risk analysis. The special risk analysis is based on industry/trade, enterprise, and commodity, which are the objects of risk analysis. This is different from Customs duty analysis, which focuses on the tariff classification and valuation, whereas risk analysis pays more attention to comprehensive risks. Namely, the department of risk management has to analyze the objects from the perspective of comprehensive risk.

There are a few ways to guide the officers to do the analysis. One way is to manage the analysis in order to ensure that the analysis done by anyone is up to the standard. To achieve this end, a standard process for doing the special risk analysis has established and the concepts of quality management were also introduced to make sure that the quality of the analysis done by staff A, B, and C does not differ much from one another because of the duration of work in the Customs, and their special skills gained from the university study. To do so, it is necessary to set up a basic process and standard for the special risk analysis. The first step, like what have been doing at the present in the region, is to collect knowledge about knowledge of commodities associated with crude oil, such as what

crude oil is, how to define the information about place of origin, the basic principles of oil trading and what the basis of the trading. In the oil trading rules and principles, the price relationship between future market and spot market need to be clarified and so are the gross tonnage of crude oil, the major oil traders and consumers. In this way these procedures are used to monitor the analysis process, in which the knowledge tree comes into play. The knowledge tree guides the officer to synthesize and identify benefits. A concept of identification of benefit has been developed as a result. The identification of benefits, for example, assumes that there are ten items in the analysis process, and then each item has to be checked and gone through item by item to see if there is any false risk. If yes, then why? Those who do the analysis would not apparently fail to notice or consider something in the analysis report after all these processes have been gone through. It is a 'qualified product' from the perspective of knowledge management. In addition, in this management processes standard and criteria for performance appraisal and check of the key nodes are also built up in the report.

From the point of special analysis, it is also can be considered as a knowledge management process, in which something about the commodity can be gained through study and something new can also be found. Through the system a knowledge chain can be developed by the category of enterprise and commodity and in this way the details of the enterprises and commodities can be known and then put into the computer system for further use and sharing, and revising and updating from use of the knowledge.

Therefore, risk analysis is about managing the experience of the disposal and prevention and control, which includes method of measurement in the future, that is, what method will be used to measure it and management of the method. This is a very huge task. Only these are available can an overall plan be worked out to manage the objects and maintain the level of risk management based on the professional forces of document verification, the staff on the frontline and follow-up forces. Respondent No. 25 further commented

"it is the most difficult thing to do in the modernization of China Customs and this

problem has to be solved. Although China Customs is much modernized already in philosophy and rationale and the equipments are no worse than their counterparts overseas if not better. The difficulty is about perception, perception of knowledge, the refining, the applying, and managing of knowledge”.

6.3.5 Knowledge Creation

Once knowledge is stored, shared, applied and internalized, the output should be the creation of knowledge. Knowledge creation is a process in which organizations can create new knowledge that can be absorbed by the employees and further applied to production activities or services, and it is a cyclical process in which new knowledge is created by physical operations or interactions of continuous justification and modification among people. Nonaka and Takeuchi (1995) describe four knowledge creation processes (SECI model): socialization, externalization, combination, and internalization. Each process involves converting one form of knowledge (tacit or explicit) to another form of knowledge (tacit or explicit). This model focuses on the important issue of how knowledge may be created through organizational sharing and is useful for identifying and evaluating certain key activities in the management of knowledge (Cong *et al*, 2007) (see section 2.5.3.). Knowledge accumulation, application and use can also contribute to the development of new knowledge through accumulation of experience that emerges from knowledge management activities (Zollo and Winter, 2002). Knowledge application and use can give new experiences about possible ways to exploit the knowledge.

In the government setting, knowledge creation may be fostered by ways of survey, research conducted by government agencies, seminars and workshops, training, staff supervision and appraisal, best practice, data mining etc. Knowledge creation may take many forms such as improved business processes and systems, innovations, better partner relationship management practices and new working relations inside and outside government agencies. In a sense, knowledge creation in government does not seem as important as it should be in the private industry, where knowledge creation in the forms of new products and services can give them a competitive edge. Knowledge sharing and use

is more emphasized than knowledge creation (Cong and Pandey, 2003). That is probably the reason why a new idea always will take longer to be implemented in government than its counterpart. Nonetheless, this author argues that knowledge creation will greatly enhance performance and also think that better results will be obtained if the public managers understand the knowledge creation model (SECI model) (Cong *et al.*, 2007).

In the Customs region under study, take risk management for an example, new knowledge is generated when a risk is collected, identified, and verified by the Department of Risk Management and case study is done by the officers concerned.

In terms of tacit and explicit knowledge, explicit knowledge is presentational and tacit knowledge is probably the potential law behind. If viewed from this perspective, there could be a very practical implication to data analysis in the region. For example, in the Customs business a commodity may be related to both price and net weight and assuming there are only net weight and gross weight involved. There is a relationship between net and gross weight and volume. Taking a product, say a model of mug, for an example, there is certain proportion between the net and gross weight and so is to the volume. The relationship, the indicators that reflect the essence and characteristics are what to be searched for. However, these indicators are not easy to be found with the naked eyes by the Customs officers. Hence, data analysis through the tool of data mining is required here for the purpose of mining tacit knowledge. It is a relationship finding, the law behind the phenomenon. This is what the region has been doing these years.

However, the progress of data mining has been going very slowly in spite of the fact that it started in China Customs several years ago, which reflects the difficulty in China Customs. It may have something to do with the tacit aspect of knowledge, the relationship, something hiding inside the phenomenon. Data and practical cases are needed to verify them. Therefore the mining of tacit knowledge is more relying on the analysis of mechanism of the cases and on use of data mining tool to find the relevance among them. Because it is not a nationwide campaign the work is left only in the hands of a few

experts. Therefore, to manage knowledge in the organization, there must be someone who takes the responsibility to study techniques and methods and the things behind knowledge, and someone to study how to apply and share organizational knowledge and deliver the right knowledge to the right person who needs it in the organization.

At present the region cannot meet all the requirements. However, as respondent No. 25 told that

“at least a plan to become the first Customs region that works out a basic flow and standard of risk management operation in China Customs has been worked out and great achievement has been made so far in risk management. If everything is worked out according to the plan, step by step, then new things will come out every year. Even now when people from other Customs come to the region, they are surprised to see that there always is something new coming out every year because a reasonably solid foundation has been laid and a system established for knowledge creation in the department.”

Although the region has been leading in the area, yet respondent No. 25 is not satisfied by saying

“Leading is not about the insight from one person, but about the mechanism in which it is getting better and faster when there is solid foundation.”

6.4 Important Factor Affecting Knowledge Management in the Chinese Public Sector

In this section, discussion is made about issues and implication of important organizational factors that influence the process of knowledge management: organizational culture, structure, strategy, education and training, incentive or reward system, and IT. This section begins with the general perception of knowledge management in China Customs.

6.4.1 Perception of Knowledge Management in the Organization

Among 43 of the respondents, majority of them never heard of the concept of knowledge

management. Only a few (No.1, 23, 20, 2, 9 and 38) with one exception (No. 25), have heard of the concept before but do not quite understand what knowledge management is all the about. The only one who knows something about knowledge management is because he attended one of the management courses while he was studying in the university. By chance the teacher just mentioned about the concept in the class. He took the interest in the subject and read something about it. He is the only person who shared the language with the author and can talk about knowledge management in real term. This further proves the finding in the pilot study that there is lack of awareness of knowledge management in the public sector, especially in the Chinese public sector.

Human being has been continuously accumulating knowledge in human history all these years. All the respondents agree, to a greater or lesser degree, that accumulation and creation of knowledge are the essential component of knowledge management and management of knowledge is very vital for an organization. Respondent No. 25 stated that

“Competition between organizations probably lies in the ability to collect, manage, and apply knowledge effectively, which also distinguish one organization from another”.

Respondent No. 1 expressed that

“knowledge management is even more professional in the management of China Customs than administration”.

For example, there are many departments or bureaus under the GACC, such as Department of Policy and Laws and Regulations, which is responsible for study on legal systems, and departments such as Customs Control and Inspection, and with the Department of Duty Collection in particular. The respondent is in the opinion that it is vital for the Department of Duty Collection to focus more on techniques and collection of knowledge about Customs valuation, tariff classification, place of origin than on laying down the rules on Customs duty and tariff.

Therefore, in the process of institutional (organizational) reforms, a more important duty for the functional departments, both in the GACC and the Custom regions, is to put more efforts onto the application and management of knowledge in addition to law enforcement of policies, rules and regulations laid down by the GACC and the implementation of standard operational procedures, which in fact are part of knowledge management, in accordance with existing rules regulations on the frontline. Namely, an effective Department of Customs Control and Inspection or an effective Department of Duty Collection is to provide more techniques and collection of knowledge about Customs valuation, tariff classification, place of origin and most needed and freshest knowledge and methods/tools to the people who are engaging in these businesses. Therefore, knowledge should have covered measures and methods/tools and so forth.

Respondent No. 1 strongly suggested that

“a position of Chief Knowledge Officer (CKO) be created in China Customs and the Personnel Departments in China Customs be called the Department of Knowledge Management. A very specialized organization like China Customs should have a department established to be fully responsible for knowledge management of China Customs and a senior staff appointed to be in charge of the whole matter associated with knowledge management. Only when the philosophy and rationale of knowledge management and organizational models are established in China Customs can there be a solid foundation for training personnel and enhancing the overall quality of Customs officers”.

However, traditional Chinese public organizations emphasized on administration in the past and paid little attention to knowledge management, including knowledge management techniques and tools and how to apply them to the practical work. The respondent takes the view that knowledge management is a very important way to enhance the ability of Chinese public management organizations to provide the services to the public and to display its standards of the provision of services. He made a further connection between risk management and knowledge management by saying

“risk management is also an integral part of knowledge management”. Therefore, risk is simply, from the point view of China Customs, an analysis and study of targets of Customs control, object of Customs supervision, such as enterprises and commodities, and risks from the staff on duty that may exist in the nature of the work, the possibilities of violation of Customs laws, rules and regulations, and possibilities of loss brought by the risks. This is one aspect of risk management in China Customs. The other aspect is that, China Customs, as a government agency and an organization, its operational quality, efficiency and risks that may exist in the internal management is a matter of collecting risks.

Risk management is a process management and corresponding management of legal systems, which is different from the operation of the departments of laws, rules and regulations and the departments of business operation on the frontline. Therefore, the respondent believed that

“the core of RM is the management and application of risk knowledge to China Customs and a very important duty for China Customs is to help Chinese enterprises to enhance its ability to abide by the law and to reduce the degree of interference by China Customs through increasing the level of law abiding by the enterprises themselves, but not merely perform a duty of checking and releasing goods at the ports as a facilitation to Customs Clearance procedures”.

In the process of management transition of China Customs, the respondent felt that

“modernization of Customs management is the modernization of knowledge management, which means that the whole organization is continuously extracting, processing, and applying the knowledge to enhance the ability to manage. If this is done, then knowledge management will provide an engine to the China Customs’ modernization drive. Knowledge management should not only be reflected in the cadre training system, Customs Colleges, Customs Research Center, Classification Center, but also in every field in China Customs”.

Respondents differ in the perception of knowledge management practice. This is not surprised since knowledge management is a new thing in China on one hand. On the other, everyone has different knowledge background and perception, so one cannot expect others think in the same way as one does.

This is the perception and practice of knowledge management in China Customs. However, there is ample room for improvement on the purposefulness and appropriateness of knowledge management. This is also a very difficult process. Management in China should learn those things needed most. Knowledge management will have a great impact on the way how management is done in China when there is the ability to obtain information and to transform information into knowledge and knowledge into organizational wisdom to enhance the intellectual capacity and management level, let alone in China Customs.

6.4.2 Organizational Culture

A national culture or a sector (i.e. public sector) culture in a country may also influence the progress of knowledge management processes and its implementation in the country. While there are some features that may generally apply to a sector in all countries, there are also other features that may only fit a sector in a country, in other words, there are some unique features that may only exist in a sector in a country. Chinese culture has its unique feature of own (Fan, 2000).

It is the culture that distinguishes a country, a nation, and even a region from another. China is apparently different from the USA. The differences between nations determine the direction of the nation, such as what political system, including life, it takes. As a matter of fact, the huge impact of the culture has on the ways how people live and work from countries to countries and persons to persons.

Most of the respondents agree that organizational culture is very important for the organization. Culture plays a vital role in an organization (Al-Alawi *et al*, 2007). In the Customs region a culture of a pragmatic, realistic and innovative approach to carry out the work has been promoted and fostered. For example, no one uses beautiful and empty words when reporting to the leaders, just go straight to the point. Such a culture has been penetrated into every corner of the organization just like what it happens in the evaluation

of cadres and it is conducive to nurturing an environment in which value is formed as to for what the organization is pursuing. Leaders play a pivotal role in fostering such an environment. During the interview, the top leader of the Customs region told the author that he has been focusing on doing three areas of work to build such a culture in the region.

Leadership Support

Administration/management and culture building in China are quite difficult issues because of the unique political, economic, and social system. However, building a culture in the Customs region must fit the whole culture of China Customs and be in accordance with the major goal of establishing a risk management for China Customs. Under these contexts, the work in the region under study has been done in the last few years is based on the following principles: transparency, democracy, and focus on the important factors.

Transparency

The Communist Party of China (CPC) and Chinese government have been carrying out the economic and political reforms to solve various social issues. Chinese government has done more things and work than US and European counterparts, but the work has not been done so well. This is because there is lack of transparency in the managerial work. Namely, no one knows what the government has done and what the units under the supervision have done. This is because information cannot be disclosed in the organization (need-to-know) due to the current system and mechanism. Take the Customs region as an example, there are over 20 Customs houses or offices in the region and the region has the duty to manage the affiliated Customs houses or offices. However, the director of the region does not know what work has been done in a particular unit in a year, not even the director in charge of the particular work, not the feedback from these over 20 Customs houses or offices, either.

First, as an administrator/manager, the department does not know what exactly is going on. Second, the directors, as a leader, are not clear about what results and what feedback

come from the managerial work. There have been a lot of investments made in the managerial work, such as investment on manpower, time, and even financing. However, the outcomes are out of proportion to the investments made. The reason is that there is no transparency, which leads to laziness from the administrators and the administered (managers and the managed). Because of this issue, no one notices what work one has done and then why people have to do the work if no one takes notices of it; no one knows what management effect it will have on people, why people have to take positive and active responses. Since no one knows what the government has done and what the organizations have done and everything has been kept in the dark with no transparency, people response by just paying lip service is only a natural result. To change people's mental attitude, it is very necessary to have transparency in the management. A quantized evaluation system for performance appraisal, online functional management, and cadre reserve system have been adopted in the region. No.31 put that

"If everything is made public, open, and transparent, then the pressure comes only from the public, not from the leaders or managers. It is an open process, the opener the process is, the less conflict it becomes. It has become a powerful intrinsic motivation".

In practice, transparency is promoted in the region through the following means. On the office website, there is column called 'Functional management', in addition to other columns such as Query, Warning, Guidance, etc. and there are seven columns altogether. The reason they put these columns on the website is for transparency. By setting up these columns, people in the whole region can see from the website what work the functional departments have done and so can the leaders. Every item has a serial number with it. For example, processing trade query number 010, the leader can see how many numbers of queries has been done for the whole year. These query numbers imply that a lot of work has been done behind the query form before they are produced. No query form will be produced if there is no hard work done. Therefore, transparency is greatly promoted in the region.

Taking another example, what people are afraid of doing at the end of every year is to

evaluate and select the outstanding people and unit in the Chinese organizations and China Customs is no exception. It has to be done every year. There are 23 Customs houses or offices and over 20 departments in the region, which makes 40 units altogether. How to select and decide a unit and person is outstanding or not becomes a headache for everyone in the region, especially for the leaders. The problem is solved in the region by setting up a transparent standard and the result can be produced from the assessment of work at the end of year in a straightforward manner. There is no need to do any extra work to get the work done. The functional department can get the result and decide who will be the outstanding people and which unit will be the outstanding unit by retrieving all the data from the database about their performance of business operation and the result is straightforward and self evident. This is the so-called merit system in China.

Taking supervision of processing trade for further example in the region, record book is used for processing trade and the rate of accuracy for processing trade record is kept in the book. If one keeps 100 books and they are all correct, then the accuracy rate is 100%, this information can be retrieved from the database. If 10 books are wrong among the 100 books, then the rate of accuracy is 90%.

There is another indicator involved in the supervision of processing trade, which is the cancellation rate after verification. If the 100 books have been put on record and all of them have been cancelled after verification, then it shows that the quality is very high. If 50 record books have been cancelled after verification, then it shows the quality is not very good. There is a further indicator that is the rate of payable tax evaded for sale in domestic market. For example, there are 100 record books, 10 books have been cancelled after verification, then it will depend on the fact that whether tax evaded has been paid in time or not and whether the price level for tax evaded moving reasonably up or down during the time for tax evaded. The level of work with processing trade can be judged from these indicators. Under the circumstance, no report and explanation are needed to the leader because all the data can be retrieved from the database and analysis of data can be done by the leaders and the result of analysis can be put on display. This method

provides an opportunity for any disagreement. If the figure is wrong and incorrect, then it can be corrected and be supported by the fact. If one unit has been doing well on processing trade, then the unit will be the outstanding unit for processing trade. If the clearance is excellent, then the unit will be the outstanding unit for clearance, and so forth. If one unit is doing well on 9 items out of ten items then the unit will be the outstanding unit for the comprehensive management in addition to the single advanced item because the data shows that the unit is doing well on all these items. This has been open to the 2300 people working in the whole region in the past few years and the outstanding person and unit are not been selected or decided only by 7 or 8 senior leaders on the management board. In the past few years no any meeting had been held to discuss about this matter in the region because the standards and outcomes are open to the public and understood by all the people in the region. Therefore, respondent No. 31 commented that “

“maximization of transparency in the managerial work is highly promoted in the region. These ideas and methods of doing things are unique in China Customs, even in the Chinese public organizations. By doing so, it is not necessary to go through layer by layer, hence, a lot of time has been saved, efficiency enhanced, and deliberate mystification of the process reduced. In the age of network, a lot of information comes out very quickly and it is not necessary to follow an old style or format such as top and down or bottom up communication. Similarly, a new method for the management of cadre reserve has also been developed in the region to make an open process”.

Democracy

Democracy is a good thing to have, however there is no democracy in absolute term. The principle of democracy is applied to the management because there is no other alternative way to do things better. In a public organization or an enterprise in China, there is an evaluation of cadre's performance every year in a similar way as selection of outstanding people or unit. It is also a difficult issue facing every organization in China because who will be selected to be the outstanding people, whether the result of evaluation work is true or false and whether the aims and objectives of evaluation can be achieved become a big question mark. This is because the social environment at present in China is not very conducive for people to speak their own mind and people dare not tell the truth for fear of

attack and retaliation against their criticism, and hence, formalism prevails. In China there is a description about the phenomenon that making a remitting effort in a down-to-earth manner to go through the motions and work assiduously on formalities. In the reports to leaders what are said are all the good things about what have been done, and little is said about problems; achievements are emphasized over and over again, even are exaggerated, mined and unduly praised. The direct result is to waste both manpower and money and the development of formalism is promoted by formalism. Under the circumstance, no one would like to tell the truth in the evaluation of cadre's performance although democratic meetings for criticism and self criticism are held in CPC every year. Truth can not be obtained because of false democracy.

To solve the problem, an online computer program has been developed in the region. At the end of every year what managers in the region have to do is just to post his/her report on the website, stating what he/she has done in the whole year, for every staff to see and read. The reports are on display for a week followed by an online ballot. Dozens of items have been set in the ballot form so every staff can tick one by one online. Computer program has been set and no one knows who cast the ballot, even the computer programmer does not know who did it. Cast is made in the ballot room with 4 or 5 computers. One can write the comments in advance and save it on the U drive. Once in the room, they can put it on the computer and then it will be uploaded into the system in the region and the Personnel Department will get the message. If one uses his own computer, the Internet Protocol (IP) address can be found out and then no one dare speak the truth. Hence, the problem of finding out IP address can be avoided by using log in number and the IP address cannot be found out, In addition, the problem of casting twice can be solved by drawing password once only because everyone has unique password that can be used to log in for the ballot. Once it is used, then it is expired. It cannot be used for the second time. Therefore, respondent No.31 believed that

“democracy is thus promoted to its maximum by publishing comments on the website. The ballot result is very real and accurate. Top leader can tell who the person just by

reading the comments on the website”.

Focus on the Important Factors

A phenomenon that arises may have something to do with many aspects, among which there always are important factors. If the important factor is found, then the problem could be easily or basically solved. Take the issue of having meals with the public money for an example, there are so many documents which have been issued regarding about the matter and the problem has never been solved. Cynically, there is popular phrase coined in the society in China that ‘a policy from the centre always meets a countermeasure from the locality’. In addition to the issues above, there are still some other factors affecting the issue such as the work style of leaders, and a poor sense of discipline, and lightening of notion of hard working and plain living. But what is the most fundamental issue of the matter? Respondent No.31 was in a view that

“the most fundamental issue is that there is enough money to spend. Therefore, the problem can be solved by controlling the money (budget). The fundamental issue is the financial budget. Once the budget is well controlled, there will be no need to issue several hundreds of documents forbidden to use the public money for feast, lodging and accommodations, and sightseeing, etc. Therefore, work in the region has been done according to the principle”.

In order to focus on important factor, 20/80 law (Pareto’s law) is also applied to the Customs work in the region. For example, in the supervision work, attention cannot be paid to all the goods and cargos because of limited resources and manpower. Therefore, this can be done through risk management and all the attention is focused on risk management. Documents will be checked and verified and goods and cargos are examined with special emphasis.

Take other examples of ‘operation warning’, ‘operation query’ and ‘problem query’ on the website, special attentions are paid to these areas. For example, there is a ‘good reputation management model’ in the province where the Customs region locates. Good reputation enterprises are those enterprises that have very good reputation for law-abiding and are

large production enterprises. The amount of imports by these enterprises can reach as high as 80% of total amount of imports in the province and there are only about 20% of such enterprises in the province. In the example of evaluation of cadres, the real reason is that no one dare speak the truth, which affects the authenticity of appraisal of cadres.

Another example is the compilation of manual/handbook for operational procedures. The attention is paid to the knowledge, policies, and rules and regulations required by the job because the main reasons are that people do not understand those policies or there are too many policies around and they do not know how to apply them, not because of taking bribery or non-compliance with the rules and regulations, not because of lack of strong career-ambition. Therefore, the manual has been worked out based on paying attention to the key issues and key points.

Great achievement has been made in these three areas of work and it leads to culture change in the region. It also proves the saying that it is easy to get a thing done and done successfully with the strong support of the leaders whether it is in China or abroad. It will be even more difficult without them.

As far as the leadership's role played in knowledge management in the region, respondents are of the opinion that more support by the management is necessary, although what has been achieved so far is impossible without support from top management. However, knowledge management does not take priority in the organization and the organization does not make time for it either.

Some of the respondents take the view that on one hand management bears the responsibility for knowledge management and makes time to lay down knowledge and to disseminate it and must encourage and direct the staffs who do not document developed methods of their own accord. On the other hand staff take initiative to share and use knowledge in their daily work. Knowledge policy is necessary for both organization and staff to engage in knowledge management activities, to acquire knowledge, to record, to

disseminate, to develop and to apply it.

In China, especially in the administrative vertical department in China Customs, one of the characteristics of the administrative leading system is to rely on the top leader in the organization to decide how much the efforts will be made to the issue. To get things done in the organization, leadership support is indispensable. What things and how things are done and what the budget is allocated to get the things done is eventually depend on the wills of leaders in the organization. Respondent No. 25 said that

“risk management in the Customs region can go so far is only because of the strong support from every leader in the past to the current one and all of them paid a lot of attention to risk management and created a very conducive environment for research and study. It is very uncommon to have 25 persons to be allocated in our risk management department.”

This illustrates the importance of management support for the implementation of risk management in the organization. Management support for implementation of knowledge management initiative is essential as well.

However, organizational culture in China Customs is culture of enforcement of and compliance with laws, rules and regulations, and policies. This has been determined by the special characteristics of China Customs. Furthermore, China Customs is also facing the challenge from the economic and political reform and the need to promote knowledge creation and innovation, analysis of knowledge, management methods, not only ideas but also methods, scientific methods.

Most of respondents (No. 25, 31, 34, 43, 9, 38, 3, 40, 15, 39, 42, 13, 18, 26 and 4, etc.) believed that the ability to learn is also very important for the organization. Therefore, an environment for learning, as respondent No.25 informed,

“is created and nurtured in our department but people in other departments are not so lucky because people in other departments are so busy with the daily work that there is

no time for them to learn. Because our Department of Risk Management is a newly established department, people who work in our department have to gain advantage by learning”.

People in the department have no absolute advantage over other established departments such as Department of Duty collection and Department of Technology, but people in the department can have comparative advantage by using technical methods to make up the gap in the work and experience and by using the business and management knowledge to exceed the technicians because technicians do not know how to apply them to the actual work. This is their special skill and capability. For the operation departments, they are able to extract neither the risk point nor the knowledge about how to control risks in the management control process. They are learning as a team and this is where the Department of Risk Management can fit in and where the team advantages lie. Thus, some basic principles and rules such as sharing, mechanism of group discussion have been set up in the department.

Trust

Another factor associated with culture and knowledge management is trust (Willem and Buelens, 2007; AL-Alawi *et al*, 2007). People tend to pass knowledge to those who they trust most in the organization and would not pass knowledge to those who they do not trust at all. It is only too natural in the organization. However, passing on knowledge by way of master and apprentice in the organization of today does not work as effectively as in the past. Mutual trust has to be built through other means. For example, for a newly established department like risk management there is no tradition to inherit from the past and there is no master to tell them what to do and how to do thing but to rely on themselves to learn together. Therefore, the first thing for them to do is to create an open atmosphere in the department and to learn and understand the rules of competition. Everyone has an equal say in the work and in the discussion, arguments in a discussion is only too normal and good for problem solving. No problem can be solved without a favorable environment for proper argument. A leader must create a favorable atmosphere for everyone to express his/her view fully to build up trust. To do so, a leader's mental

attitude must be very open and listen what others have to say, which means that everyone has been treated in a very fair manner. A leader must be willing to share with others what he/she knows before others tell theirs. Views and opinions are respected in the discussion and the whole process is transparent and open to all. By doing so, they are competing with others through collective intelligence as a team. Every member in the team will benefit from the success of the team work. Respondent No. 25 explained that

“we believe that relying on single person cannot solve the problem of modern management facing China Customs. In addition, we pay more attention to updating knowledge and learning new knowledge by selecting people with different background, such as people with computing and management background, to meet the work requirement of the department. That is what and how our department has been doing since the establishment of the department. It has become our department culture”.

However, the respondent expressed the difficulty to get things done between departments. On one hand, it is comparatively easy to establish a new culture in a new department such as his. On the other hand it is very hard to change the established culture in other departments in the organization.

Respondent No.31 suggested that

“it is necessary to take measures to promote mutual trust in the organization, not simply by shouting slogans or words and it also should be based on transparency and democracy”.

The examples of selection outstanding people, assessment and evaluation of cadres, even the selection and promotion of cadres promote mutual trust in the organization. Further examples of putting a name-tag for those who provide information and knowledge into organizational database and those who publish research papers will also encourage trust and creativity and thus the experience and information are shared among the people as a result.

6.4.3 Organizational Structure

The characteristics of organizational structure can facilitate the development of knowledge management processes (Cortes *et al*, 2007). The existence of the organization is not merely for the performance of duty or function but also for the adaptation to change and every organization will work for its own benefit and interest. The purpose of an organization is to accomplish a task, not for existence of the organization itself, especially so for a public organization.

The unique political system has a great impact on the organizational structure in China. Chinese public organizations are strictly controlled by the Central Office of Establishments of China and it is so rigid that once the organization is established hardly can it be changed. However, it is different in USA though. An incident of 911 led to the establishment of the Department of Homeland and Security once the budget was in place. This will not happen in China. In spite of this, some of the respondents do not think that politics is a big issue in China, but rather it is more about management.

In China Customs, the organizational reforms have been carried out in a traditional manner, including the establishment of the Department of Risk Management when risk management was made the key link in the Second-Step Development Strategic Plan for the establishment of Modern Customs Regimes (2004-2010). The essence of it is to build up a sound risk management mechanism. Great efforts have been made to implement the plan.

To implement risk management as a part of knowledge management in China Customs, there must be organizational structure to support the implementation of the initiative. However, the current vertical structure is not conducive to carrying out such a project because China Customs exercises a vertical and three-tiered management structure. Making lateral connection or coordination of work between departments is one of the

most difficult things to do in the Chinese public sector. Examples of the difficulty can be illustrated by the works in the general office and in the planning department.

Ways to Break Silos between Departments

Respondent No. 20 commented that

“the current organizational structure is an obstacle to knowledge management and synthesis of knowledge” so the obvious question is how to remove the obstacle. Under the present system in China, no change can be made to the whole organizational structure. What can be done is to do things within the system and within the power allowed”.

Therefore, what the respondent has done was to put different persons from different departments together to form a team or a task force (Nonaka and Takauchi, 1995) by introducing the concept of project management. There are five sections with 25 persons in the Department of Risk Management. What the respondent has done was to carry out analysis an enterprise and/or a product by forming a team, in which process knowledge and the result of analysis are shared and disseminated among the team members, and applied further to the overall prevention and control plan.

In government, there are many functional silos created by large and bureaucratic organization, operating on ‘need to know’ basis. ‘Knowledge is power’ and fear of mistakes making are typical mindset of the managers and staff, who are generally not aware of what other people do in other parts of the organization. It is very hard to break the silos between the departments in the internal management of government organizations. However, respondent No. 25 suggested ways to break the silos

“is to make everyone understand its position and responsibility in the organization. A section chief has to know what responsibility he/she should assume or will be held accountable for failing to do so”.

In a team formed to do a special analysis of export rebate and export duty, the team leader

is not necessarily the section chief and it could be anyone qualified to be the leader in the team. However, the team leader is the only one who is responsible for the whole project after all. In order to establish a project management mechanism in the department, there is a section specially in charge of collecting all the analysis projects, between 10 to 20 projects in a year, either jointly participated by the frontline staff, and by the staff in the department, or by other departments in the Customs region.

Some tools of project management are used to do project. A plan as to how to control has been worked out in the department, such as the feasibility study of analysis project and verification of them. Staff from the department take fully charge of the projects. In the process of study project, how many stages needed to go through and each of these stages are also carefully controlled. A control process for review procedures is also needed in addition to the requirement the result should meet. Introduction of the concepts of both project management and process control is used to deal with these problems.

Another way to manage knowledge within the current structure, as suggested by respondent No. 31,

“is to decentralize the power of the functional departments to the lower levels so that the departments can concentrate on the work on the management of knowledge and provision of guidance, supervision, and services by making rules and setting standards rather than exercising the power of ‘approving application document’”.

In this way, the functional departments can act as a ‘referee’ to check if there is any wrong-doing. If found, then it will appear on the website in the functional columns, ‘Query’, which has to be answered by the person or departments concerned within three working days. There are other columns as well, such as ‘Policy Warning’ and ‘Risk Warning’, which will be issued to remind the policy change and a risk is found. An ‘Analysis Report’ will also be given when a general trend has been established in the management process. ‘Operation Guidance’ will be provided when no one knows how to do things in the operation. Therefore, the functional departments are increasingly moving

towards a process of managing functional knowledge and functional department has become, according to the frontline staff, a think-tank and guidance base.

A Chief of Knowledge Management Officer Needed for China Customs

A position of Chief Knowledge Officer (CKO) has been created in the many multinational companies to be responsible for making strategic plan to implement knowledge management initiative in the private sector. Government needs to transform itself to get closer to serve the general public better. Knowledge management can provide the solution and help government to accomplish this goal by encouraging those to share and apply their knowledge in order to break down the functional silos to increase knowledge flow. In doing so, various new positions called the Chief Human Capital Officer (CHCO), CKO, and Knowledge Management Officer (KMO) have been created in government to encourage knowledge sharing and application, learning and strategic management of human capital. For example, in the US government agencies, the title of CKO was first given in 1999 to the General Services Administration (Yu and Hartman, 2000), and CHCO to the newly formed Department of Homeland Security in wake of terrorism after 9. 11 (Cong *et al*, 2007).

A huge organization like China Customs should have a CKO appointed at a ministerial level to be responsible for making strategic plan to implement knowledge management initiatives and carry out knowledge management activities in the organization. A CKO will have to think about how to introduce new knowledge into the organization, how to manage the existing knowledge in the organization, how to establish an incentive mechanism for knowledge application, knowledge sharing, and knowledge creation in the organization, and how to use the existing IT to support knowledge management activities. In the application of knowledge management to China Customs, CKO should pay much more attention to the value and philosophy of knowledge management and take organizational measures to promote knowledge management. In other words, CKO has to apply theories of knowledge management to the practices of Customs and build knowledge system to support knowledge management initiatives and activities.

6.4.4 Organizational Strategy

A knowledge management strategy is crucial to the success of a knowledge management program (Plessis, 2007). Risk management mechanism has been made the major goal to build China Customs into a “smart Customs” and comprehensively raise Customs management level by gradually establishing a risk management mechanism that covers all areas and different levels of Customs work in accordance with the requirements of “scientific methods, advanced means, accurate identification, fast response, close coordination and effective management”.

To achieve this goal, respondent No. 25 expressed that

“the concept of scientific management of China Customs needs strategic management for risk prevention. The problem in the management of China Customs is that there is lack of strategic management planning, which means lack of knowledge management in China Customs because there is little perception of internal management law and little investment has been made on knowledge accumulation and sum-up of methods. A huge organization like China Customs even does not have a formal research institute to match its size and magnitude. The research capacity in Shanghai Customs College is insufficient to cope with the scale of this nature”.

Risk management, as a key means to build a smart Customs, should inform what needs to manage and what not to manage in the organization. This cannot come from the minds of the experts in China Customs, but it has to rely on knowledge management of risk point, on methods and techniques of analysis measurement, and on overall prevention and control. In other words, it has to be achieved through the ability to make an overall planning.

Therefore, the concepts of process management and quality management must be introduced into risk management to get the work done. Without these concepts it is very difficult to introduce the concept of risk management. This is probably why it is so hard

to promote risk management in China. The respondent commented that

"the difficulty lies in lack of the awareness of these concepts in the minds of leaders at every level in China. Process management and quality management are the basis of modern management and they have not even been done well. In China, leaders focus more on how to use people and how to use them better than on the strength of knowledge and management model in the organization. This could be an issue that needs more attention by leaders in the organization".

There are all kinds of knowledge required to do risk management, such as knowledge of commodities and enterprises, knowledge of techniques and methods of risk analysis, knowledge management of risk knowledge. Of course other kind of knowledge is important too, but this knowledge is focus of the concern and is needed badly for the management and accurate control of market economy. To manage this knowledge is very important for the organization. The problem so arisen is because of the need for accurate control in China Custom and without management of this knowledge accurate control cannot be accurate. In the past the control was done through principle and policy. This represents the knowledge gap between now and the past. Nonetheless, China Customs is increasingly moving toward accurate control by using computer to control the particular enterprise, products and certain stages in the process. Although organizational culture and education and training of people are very important in the organization, but the respondent felt that

"the most important thing for China Customs at present is how to position knowledge management and its role it plays in the organization".

"Only knowledge management is put in place can a strategic planning be done. Judging from so many years of experience from the reform, what we lack is the strategic conception, what has been proposed is too short-sighted and lacks of support when running into difficulty. Some of the reform ideas are difficult to be applied due to lack of powerful methods and technical support. This could be the problem if China Customs runs into any difficulty."

Respondent No. 1, 20, and 23 agreed with the above comments.

6.4.5 Education and Training

Education and training is a very important part of knowledge management process (Hwang, 2003). Education and training plays a vital role in the process of knowledge acquisition, sharing, and application and use, storage, and creation. How education and training is done can directly affect how knowledge management is implemented in the organization (Plessis, 2007).

The Department of Education in the region is in charge of education and training in the organization. Basically, the education and training of staff take three forms: off-job-training, on-job-training, and self-learning. The content of these trainings is largely general type of training, specific professional training and in-house training within the region or each department in the region. There are about 20 classes of training in the Customs region every year in the whole region. There is one or two training class at least in each functional department every year, purely for business operations training. The trainers are selected and chosen either from inside the organization or experts invited from outside in connection with the business of Customs. For example, the Department of Audit-based Control usually invite experts from banks and accounting firms to give lectures on the relevant knowledge and the Department of Processing Trade and Bond Operation invite experts from the enterprises. There are regular training programs and are quite well done in the organization. It is very interesting that the author was honored to be invited by GACC to give a lecture on knowledge management, without compensation due to financial constraint, to the secretaries to the General Commissioner and Deputy Commissioners in Beijing Head office.

What effect of these trainings have on the staff is very difficult to tell. However, some respondents (No. 30, 27, 18, 28, 29, 32, 33, 19, 22, and 17, etc. said that knowledge learning was largely done through self study or self learning depending on personal interest in relation to the work they have been doing. respondent No.30 said

“it all depends on the person because it is up to the person to make the learning efforts. The environment is same to all and why some are doing better than others.”

All the respondents agreed that it is very important to educate and train staff in the organization. However, sometimes they are very confused with the ways that budget for education and training is spent or used in the organization. On one hand, there is enough budgets for having a training seminar or workshop just like buying something from the department store and it is so easy. However, on the other hand, it is so difficult to apply funding for staffs to study management courses in the universities because management courses are mostly run by the universities and management training is most needed in the organization. Funding staff to study in the university is not the kind of traditional funding for training in the leader's mind. Therefore, the limited resources should be used for most needed areas and it makes a huge difference. “If used for everything it becomes nothing,” said one respondent.

In addition, learning as a team is a form of organizational learning in the organization (Yang, 2007). The theory of organizational learning owes much to the work of Argyris and Schon (Pemberton and Stonehouse, 2000, p.187). Argyris and Schon (1978) developed a generic notion of organizational learning as ‘single-loop’ or ‘double-loop’ learning, which cuts across the organizational definitions. In Argyris and Schon's (1978) account, organizational learning focuses on both single-loop and double-loop learning. However, the interviews suggest that most of organizational learning respondents are talking about is single-loop learning, not double-loop learning. To manage knowledge in the organization, not only single-loop, but also double-loop learning are needed in the organization to make knowledge management more effective.

6.4.6 Incentive or Reward System

Incentive or reward systems in the organization, either spiritual or material, will have a

great impact on the behaviors of staff (Gal, 2004; Plessis, 2007; Milne, 2007). So is the case in the management of knowledge in the organization.

In the Customs region, incentive or reward falls into the responsibilities of the following department respectively: Personnel Department, Education Department, and the Office for the Party Affairs. The division of work among these departments is basically as follows: the Education Department is in charge of training, the Personnel Department is in charge of promotion including selection of the outstanding people, and the Office for the Party Affairs is in charge of admission to the Party and holidays.

Respondent No. 31 thought that

"a relatively sound incentive and reward system has been established in the region. In the Customs region appointment, promotion, appraisal of performance, and selection of the outstanding people, studying in the university, even holidays are closely linked to daily work".

In the past, Chinese organizations usually sent those people who were not able to work well to study in the university or for holidays because they could not do anything anyway in their work. However, Change has taken place in the organization nowadays and all these benefits, such as promotion, selection of outstanding people, training, and holidays, are now awarded to those who have done well in the organization as incentives and rewards.

This is the case in the Customs region. However, a mechanism for knowledge management as an important way of gaining competitiveness has not been established in China Customs. It is far from a sound incentive or reward mechanism as far as the whole China Customs is concerned. Respondent No. 25 saw it as

"a potential issue in the management of knowledge in China Customs and leave it to a new Commissioner to be nominated for some changes to be made in China Customs.

The respondent understands that knowledge management is well practiced and there are successful stories of knowledge management practices some major multinational companies overseas". However, it is very few in the management of the public organizations. One of the main reasons is because the private enterprise has motivation to do so. But what motivates staff in the public organization to be willing to create and innovate within the limited resources?

Therefore, a sound mechanism of incentive or reward needs to be built up for knowledge management in China Customs. Like what has been done in the Customs region, the ownership of the knowledge is acknowledged, respected, and protected by putting a name tag to those who have found and invented that knowledge. They are entitled to be rewarded for the effectiveness in the application and sharing of knowledge. A careful consideration should be entitled to be rewarded and the extent to which contribution is made by staff because the public organization is indeed different from the private enterprise. In other words, there is question of how to provide incentives to staff in order to reward them for the achievements and results made by use of national resources and the public right in the public organization.

Although spiritual encouragement may be preferred in the public organization, still a financial incentive mechanism is much desired because people are not living in the vacuum. In the process of collecting and identifying risk knowledge, those who have found the risk point should be awarded more financially than those who found the case of violation in the routine checks because knowledge and the laws, which have more value, are found. By doing so, the problem of having to deal with an issue on its own merits could be solved and breaking off corn cobs in the bears' style such as no analysis, sum-up and extraction is made about the cases of violation could be avoided in China Customs. Another issue facing Chinese people is that traditionally and culturally people are reluctant to share knowledge with others. For example, a case investigator is not willing to tell the analyzers how the investigation was done. Therefore, incentive and reward mechanism should solve this problem as well (This issue is discussed in the section

5.3.3).

6.4.7 Information Technology (Knowledge Management Systems)

Although knowledge management is not about technology, technology plays a very important role in knowledge accumulation, distribution, sharing, and application and use. Technology is not the solution to knowledge management problem, but a tool to support knowledge management activities (Edwards *et al*, 2005; Schulte and Sample, 2006)

Work related to the application of science & technology is an important basis of Customs operations. China Customs has deeply engrained the strategy of “Building a smart Customs with science & technology” in its daily work, pays great attention to raising the management level by using science & technology and the effectiveness of science & technology applications, gives full play to the fundamental and vanguard role of Customs science & technology applications, and have basically established E-Customs, E-Port and E-General Administration application systems. These systems are providing strong technical support for networked Customs clearance operations, smart control, digitized management and sound administrative decisions.

In 2005, the efforts of China Customs to build an IT-based Customs have yielded obvious results. Break-throughs were made in the development of China E-Port Data Center. In November 2005, the 12 agencies that are jointly building the China E-Port Data Center successfully convened a meeting on establishing local E-Port data centers in Ningbo, China. The disaster-tolerant back-up system for the dual center H2000 System was successfully put into operation and the management mechanism for the secure and reliable running of Customs information systems was basically set up. HB2004, the Customs nationwide, and the portal website of China Customs has been successfully been opened

The author had an opportunity to see the computer system, browsing on the website (Intranet) and have seen how the business activities were conducted online in the

Customs region. Very few paper documents and manuals are issued and the electronic form can be retrieved from the computer, and business is handled by emails and functions provided online. Everyone can key in his/her job number and all the business operations for the job will appear on the screen. If anyone wants to check policy and rules and regulations, he/she can just key in the key words and then rules and regulations soon appear on the screen of the computer. Online announcement, online query, online warning can provide much information with faster speed and larger coverage. Office automation in the region is very advanced and no worse than their overseas counterpart, if not better. Information technology infrastructure/systems have been in place for knowledge management in the region. IT as a means to enhance efficiency and effectiveness is widely applied.

6.5 Conclusion

The essence of managing knowledge is concerned with deciding with whom to share, what is to be shared, how it is to be shared, and ultimately sharing and using it, especially so in the public sector. Managing knowledge produces value when shared knowledge is used and reused (Cong *et al*, 2007). Consistent value occurs when there is an atmosphere of trust and motivation for people to share and use knowledge, when there are systematic processes to find and create knowledge, and, when needed, there is technology to store and make knowledge relatively simple to find and share. (CIO Council, 2001).

This study shows that China Customs has been engaging in knowledge management activities, such as knowledge acquisition, storage, sharing, application and use, and creation all the time, despite of that fact that knowledge management is a new management concept in China and no knowledge management is mentioned explicitly in the organization. Therefore, much effort have to be made to manage knowledge in a systematic and organized manner in order to succeed in an attempt to implement knowledge management in China Customs to enhance its efficiency and effectiveness.

Conclusions are thus drawn from the study of China Customs as follows:

6.5.1 Political Reforms Lagged Behind Economic Reforms

Administrative reforms (in disguised political reform) have lagged behind economic reforms. Some respondents expressed the view that politics is a big issue in China, but rather it is more about management. However, other respondents feel frustrated by the lag and lose confidence to make any suggestion because of their inability to change anything under the present political system (one party politics). Almost all the reform in China are always labeled 'reform with Chinese characteristics', which is shaped by its 'Chineseness' in relation to traditional Chinese culture, socialism and development.

6.5.2 Top-down Management is the Dominant Model Used in the Organization

Under the present system in China, any movement or initiative has to be initiated from the top, adopting top-down management model. Middle management does not have a say in the matter, to say nothing of the people at the bottom. Therefore, the top leaders have to make a decision about whether to implement knowledge management in the organization. For knowledge management initiatives to be successfully implemented in the Chinese public organization, management education is indispensable for the leaders in the public organizations to gain their support in the initiatives.

6.5.3 Single-loop Learning is the only Form of Organizational Learning

From organizational learning point of view, learning in the organization is taking place in the form of single-loop learning rather than double-loop learning. Single-loop learning occurs when a change in the behavior routines happens. It involves with the detection and correction of errors through a feedback loop and leaves the values and norms underpinning a strategy or action unchanged. At present learning in the organization does not challenge current norms, assumptions, objectives and basic policies. This has a lot to

do with the current system in the Chinese public sector. Double-loop learning should be encouraged to increase the learning abilities of staff for more innovation and creativity in the organization.

6.5.4 Lack of Perception of Knowledge Management in China Customs

Few people in China Customs have heard the concept of knowledge management, even fewer understand what knowledge management is all the about. This is a fundamental issue in the implementation of knowledge management in China Customs, nothing can be done without solving this problem first and even more important thing to do is to change the mindset of leadership and gain their support. Awareness has to be raised not only to managers at all levels, but also to frontline staff. The concept of knowledge management need to be better understood and benefits much talked about by everyone (Cong and Pandya, 2003). Efforts have to be made to promote the understanding and benefits knowledge management and solid foundation laid for knowledge management initiative to be implemented in the organization.

6.5.5 Lack of a Comprehensive Knowledge Management Strategy to Implement Knowledge Management

People and culture, processes, and technology are the key elements of the environment. Knowledge management focuses on people and organizational culture to stimulate and nurture the sharing and use of knowledge; on processes or methods to locate, create, capture and share knowledge; and on technology to store and make knowledge accessible and to allow people to work together without being together (Cong and Pandya, 2003).

Although the major goal of establishing a risk management mechanism is to build China Customs into a 'smart Customs' and comprehensively raise Customs management level by gradually establishing a risk management mechanism, no knowledge management is mentioned whatsoever in the strategic plan of China Customs. To succeed in the attempt,

a comprehensive strategic plan including important factors such as human resources, process, and technology in the implementation of knowledge management in China Custom must be in place.

6.5.6 Need to Build a Knowledge Sharing Culture

People are the most important component of knowledge management because managing knowledge depends upon people's willingness to share and reuse knowledge. Getting an organization's culture 'right' for knowledge management is typically the most important and yet often the most difficult challenge. Knowledge management is first and foremost a people issue. The success of knowledge management initiatives depends upon people's motivation, their willingness, and their ability to share knowledge and use the knowledge of others (Cong and Pandya, 2003).

A national and local culture, even a public sector culture can have an impact on the behaviors of staff in the organization. Leader should act as a role model, a teacher and listener to guide staff how to behave in the organization and provide an open and conducive environment in which communication is free flowing, mutual trust is built and knowledge sharing are encouraged.

6.5.7 Budgets for Knowledge Management

China Customs is now increasingly moving towards the international practices and doing better in management. Funding for knowledge management should be in place to make sure it is implemented. With a special fund at hand, knowledge can be collected, disseminated and applied in the organization. Training should be carried out in a comprehensive manner with a complete plan and limited resources should be well used and spent on the most needed areas in the organization. Knowledge managers, champions, agents should be trained to have a role to play in the implementation knowledge management in the organization.

In China, the general mood of society is that there is much talk, much is written down, all kinds of plans are made, but subsequently nothing is done. The decision-making is very slow as a result of the reigning hierarchy. This issue must be avoided in the knowledge management implementation process.

6.6 Chapter Summary

Based on the literature review and the framework developed in Chapter, together with the interview result from the main study in a Chinese public organization, China Customs, this chapter have discussed about how knowledge management was practiced, issues and difficulties encountered, challenges and important factors. The author interpreted the interview data by focusing upon five knowledge management process and six important factors identified in the framework. Moreover, this study also offered a vision of how existing knowledge management theory is extended in the context of Chinese public sector when engaging in knowledge management activities in China.

Overall, the findings of this study offered a better understanding of knowledge management in the public sector. Especially, the findings added additional insights on the mainstream knowledge management theory by exploring knowledge management in China Customs. Theoretically, this research identified a few set of influencing factors that have not been well studied in China. Most importantly, this research more clearly illuminated the framework by combining knowledge management process with the important factors. This is particularly valuable for shedding the light on how to start a knowledge management initiative in the Chinese public organizations. This research implied that there is no standard way of managing knowledge that can be applied to all cases. Public managers should carefully consider different circumstances and scenarios when taking a knowledge management initiative.

Chapter 7 Conclusions

7.1 Introduction

It is known that knowledge management issues in the public sector is much neglected, which is not in line with the importance of the public sector; moreover, compared to knowledge management in a private organization, a public organization is more complicated, harder to understand, and has received less attention. Few attempts have been made to identify the knowledge management processes and issues and difficulties in the public sector and to systematically study the knowledge management process and issues and difficulties in the context of the public sector, none in the Chinese public organizations.

This research attempted to address these two neglected areas by means of knowledge management, and thus mainly aimed to address the issues and difficulties in the public sector with a view to developing and evaluating a knowledge management framework for the public organizations, to help them have a better understanding of the process of the knowledge exchange within the organization. This objective was achieved, firstly, by a review of background literature in the areas of knowledge management processes and organizational learning. Then, based on the review, the key issues related to public organizations' issues and difficulties were analyzed, an initial knowledge management framework was developed, and the important factors involved in the knowledge management process and implementation were identified. A pilot study through interview was used to collect empirical data for the key issues about the knowledge management processes and implementation; its key findings were further verified by relevant interviews, and the triangulated answers provided more reliable understanding and knowledge on the public organizations' issues and difficulties, and also provided a very strong empirical underpinning for the development of the framework. The framework and identified important factors were also evaluated or verified by the face-to-face interviews

with the public organization managers, their responses demonstrated that the evaluated framework could help the public organization have a better understanding of the knowledge management process, and the identified important factors could help the public organizations to cope with the issues and difficulties, and improve their management skills and knowledge. Both the framework and important factors were therefore believed to be very helpful for the public organizations.

This chapter begins with concluding the discussion of the study by, firstly, presenting the ways in which it has contributed to knowledge; then, managerial implications; and next, identifying some limitations of the research and areas for further research. Following this, the author reflects on personal intellectual journey and research process through epistemic reflexivity and methodological reflexivity. Furthermore, the role as a researcher the author acted throughout this research is evaluated and judged. Moreover, as an important element of this PhD thesis, evidence of personal professional development and reflective practices throughout this intellectual journey are finally explored by considering successes and challenges and difficulties in completion of this PhD research journey.

7.2 Main Contributions to Knowledge

While much theory exists on knowledge management in the private sector, little empirical work has been undertaken in the public sector. Hence, there is a large gap in the body of knowledge in this area, and even less with regard to government bodies and knowledge management in the Chinese public organization. This research will mainly contribute by bridging the gap in the knowledge, seek to analyze and develop solutions to the common challenges and needs of government and contributes to the literature through this work on public governance that includes knowledge management. This research will add knowledge on how knowledge can be managed in the Chinese public setting to achieve the organizational objectives, and provide a guideline for managers and frontline staff to implement knowledge management strategies in policy making and service delivery.

It is possible to identify three distinct contributions to knowledge that have resulted from this research. These are:

- contribution 1—identification of knowledge gaps between the private and public sector in the field of knowledge management in the Chinese public sector;
- contribution 2—development and evaluation of a public-sector theoretic framework of knowledge management in the Chinese public sector;
- contribution 3—identification and verification of important factors for knowledge management in the public sector, especially those factors influencing knowledge management that are unique to the Chinese public sector.

Each of these contributions will be described below in details.

7.2.1 Contribution 1—Identification of Knowledge Gaps between the Private and the Public Sector in the Field of Knowledge Management

The review of literature shows that very little empirical research has attempted to look at the knowledge management issues and difficulties in the public organization and to provide empirical evidence to confirm the belief that knowledge management is of prime importance for the public organizations, although the analysis and deduction that lead to the belief sound rather reasonable. Therefore, there is a big gap that exists in the empirical identification of the public organizations' perceptions on the importance of, and specific needs for, knowledge management and issues and difficulties for the Chinese public sector.

This study fills the gap by conducting a pilot study and face-to-face interviews in the Chinese public organization. The pilot study offers valuable insight into the public organization current knowledge management situations, and their managers' and staff's perceptions on various issues related to knowledge management in the public sector. Key findings emerged from the pilot study are further validated and elaborated through the semi-structured face-to-face interviews. Then, the key findings and interview results have

been triangulated and strengthened so as to provide a more reliable understanding and knowledge on the public organization perceptions and practices in the public sector. The empirical evidences collected from the study and interviews confirm the general belief that knowledge management is of prime importance for the public organizations, and demonstrate that the public organizations have very strong needs for knowledge management, and thus provide very strong practical evidences to underpin the necessity of the development of the knowledge management framework. Specifically, the main conclusions drawn from the interviews are:

- The public sector is widely accepted as being different from the private sector and has distinctive culture, mission, competency, and motivation, which will inevitably affect knowledge management practices in the public sector. It varies from country to country.
- Knowledge sharing is the focus of knowledge management at the present stage, evidenced by the emphasis on the researches conducted in the literature in this area in both the sectors.
- Both tacit and explicit knowledge are needed in the knowledge creation and sharing process, but tacit knowledge is more emphasized in the private sector for the sake of gaining competitive advantage, which is less required in the public sector.
- There is also a more of focus on internal knowledge sharing and knowledge creation in business organizations than on external knowledge sharing in government. Exploration is employed more in business than exploitation in government for the same reason.
- It is more important to employ intrinsic than extrinsic motivation for knowledge management in government due to the constraint of resources.

7.2.2 Contribution 2—Development and Evaluation of an Framework for the Chinese Public Sector

From a theoretical perspective, knowledge management in the public sector relatively has received much less attention than in the private sector although the latter is often found to

be laborious, time consuming, complicated and difficult to understand, and has also received negligible systematic attention. Evidences from literature show that the current knowledge management frameworks in the private organization cannot effectively reflect upon the complexities and difficulties of the knowledge management in the public sector, and cannot validly help the public organizations to cope with the issues and difficulties in the business process of government. This point strongly implies that it would be of theoretical value if a knowledge management framework can be developed to help the public organizations have a better understanding of their knowledge management processes, and lay a good basis for them to cope with issues and difficulties and to enhance the performance.

In addition, from an empirical perspective, the key findings from the pilot study confirm that knowledge management is indeed of importance for the public organization, and they have very strong needs for knowledge and knowledge management. This conclusion provides very strong empirical underpinning for the necessity of the development of the knowledge management framework. Due to the public sectors' importance, the development of the framework for the public sector would be of not only theoretical, but also practical value if it can work as expected.

The finding (see section 5.3) also suggests that knowledge management in the public sector is still in its infancy although the public organizations have been managing knowledge all the time without awareness. This research focuses on issues and difficulties in the processes and implementation of knowledge management in the Chinese public organization. The review on relevant literature suggests that organizational learning's strength at building up the connections between different levels and the process view should be used to develop the new framework so that it can help the public organizations have a better understanding of the complexities and difficulties of the knowledge management, and lay a basis for them to effectively cope with issues and difficulties in the process. This study thus firstly identified issues and difficulties in the knowledge management processes by means of face-to-face interview, then a process model that

consists of five stages: *knowledge acquisition, storage, sharing, application and use, creation*, was proposed by means of the process view with the cultural difference, constituted an framework, and also reflects the complexities and difficulties of the knowledge management process.

In order to evaluate whether the framework generally reflects the knowledge management practices in the public organization, and could help them have a better understanding of knowledge management process, 43 face-to-face interviews were carried out. The evaluation could further clarify some particular areas that may have been unclear previously in the public organization, provide deeper knowledge about the complexities and difficulties of their knowledge management practices, and thus refine the framework so that it can work as expected and be accepted by the Chinese public organization. This has been supported by the feedbacks from some of the interviewees, such as No. 23, 25, and 31.

Through the pilot and several rounds of formal interviews and based on the empirical evidences collected from the interviews, some important conclusions can be summarized as follows:

- Administrative reforms (in disguised political reform) have lagged behind economic reforms. Some respondents expressed the view that politics is a big issue in China, but rather it is more about management. However, other respondents feel frustrated by the lag and lose confidence to make any suggestion because of their inability to change anything under the present political system (one party politics). Almost all the reform in China are always labeled ‘reform with Chinese characteristics’, which is shaped by its ‘Chineseness’ in relation to traditional Chinese culture, socialism and development.
- Under the present system in China, any movement or initiative has to be initiated from the top, adopting top-down management model. Middle management does not have a say in the matter, to say nothing of the people at the bottom. Therefore, the top leaders have to make a decision about whether to implement knowledge management

in the organization. For knowledge management initiatives to be successfully implemented in the Chinese public organization, management education is indispensable for the leaders in the public organization to gain their support in the initiatives. The views of interviewees NO. 23, 25, and 31 and others support this argument.

- From organizational learning point of view, learning in the organization is taking place in the form of single-loop learning rather than double-loop learning. Single-loop learning occurs when a change in the behavior routines happens. It involves with the detection and correction of errors through a feedback loop and leaves the values and norms underpinning a strategy or action unchanged. At present learning in the organization does not challenge current norms, assumptions, objectives and basic policies. This has a lot to do with the current system prevailing in the Chinese public sector.
- Few people in China Customs have heard the concept of knowledge management, even fewer understand what knowledge management is all the about. This is a fundamental issue in the implementation of knowledge management in China Customs, nothing can be done without solving this problem first and even more important thing to do is to change the mind of leadership and gain their support. Awareness has to be raised not only to managers at all levels, but also to frontline staff. The concept of knowledge management need to be better understood and benefits much talked about by everyone. Efforts have to be made to promote the understanding and benefits knowledge management and solid foundation laid for knowledge management initiative to be implemented in the organization (Interviewee No. 25)
- Although the major goal of establishing a risk management mechanism is to build China Customs into a “smart Customs” and comprehensively raise Customs management level by gradually establishing a risk management mechanism, no knowledge management is mentioned whatsoever in the strategic plan of China Customs (Interviewee No. 25). To succeed in the attempt, a comprehensive strategic plan including important factors including human resources, process, and technology

- in the implementation of knowledge management in China Custom must be in place.
- A national and local culture, even a public sector culture can have an impact on the behaviors of staff in the organization. Leader should act as a good model, a teacher and listener to guide staff how to behave in the organization and provide an open and conducive environment in which communication is free flowing, mutual trust is built and knowledge sharing are encouraged (Interviewee No. 25 and 31).
 - China Customs is now increasingly moving towards the international practices and doing better in management. Funding for knowledge management should be in place to make sure it is implemented. With a special fund at hand, knowledge can be collected, disseminated and applied in the organization. Training should be carried out in a comprehensive manner with a complete plan and limited resources should be well used and spent on the most needed areas in the organization. Knowledge managers, champions (Jones *et al*, 2003), agents should be trained to have a role to play in the implementation knowledge management in the organization.
 - In China the general mood of society is that there is much talk, much is written down, all kinds of plans are made, but subsequently nothing is done (Interviewee No.31). The decision-making is very slow as a result of the reigning hierarchy. This issue must be avoided in the knowledge management implementation process.

7.2.3 Contribution 3—Identification and Verification of Important Factors for Knowledge Management in the Chinese Public Sector

The specific reasons for knowledge management practice to be transferred from the private sector to the public sector are that, compared to the former, the latter has its unique features such as political factor and provision of services to the public. The evidences from the literature reveal that very little literature exclusively addresses the knowledge management issues and difficulties and important factors for the public organizations, even less for the Chinese public organizations and the relevant strategic issues have been largely neglected. The review further suggests that previous writing on this topic has dealt with the issues only in a fragmented way.

To fill this gap, this research has made positive efforts. Firstly, this study has identified some important factors by literature reviews from knowledge management projects mainly in the private sector. This lays a good basis that makes the previous suggestion feasible. Secondly, from a strategic perspective, compared with knowledge management within the private organizations, the public organizations inevitably causes many more factors to be involved in the process of knowledge management. The identification of these important factors can remind the public organizations what factors should be taken into account when they are engaging in knowledge management activities in the processes and thus help them address and have a better understanding of the issues and difficulties. Moreover, they can further reflect the complexities and difficulties of knowledge management. Therefore, these important factors will be very helpful for the public organizations. This study has systematically identified the important factors related to knowledge management processes by means of relevant literature.

The following work was to verify whether the identified important factors are really important for the public organizations, and can help them address and have better understanding of issues and difficulties in the process and implementation of knowledge management.

The verification consisted of 43 face-to-face interviews. The conclusions for the verification of the important factors can be summarized as follows.

- China is a socialist country and now in a transition to a market economy. Great success has been achieved since the economic reform started nearly three decades ago. However, evidences suggest that political reform has lagged behind the economic reform, which will have consequences for the economic reform. Although administrative reforms have been forged in disguised political reforms, they cannot fundamentally change the political system in China. The progress of democracy will also be slowed and it will only happen in an incremental manner. This will seriously delay the introduction of new management ideas into the Chinese public sector. This

is probably the reason why almost all the reforms are always labeled with ‘Chinese characteristics’.

- Because of the current political system, it is not surprised the top-down management model is adopted in the public organization. Every campaign or policy is coming down from the top and is implemented down at the lower level. For a public organization like China Customs adopting a paramilitary control, it is the duty for them to implement and enforce the national laws and policies. In a sense, it is effective to adopt the top-down management model. However, innovation and creativity may be stifled as a result.
- Although leadership support is the key to the success of any project and initiative, it is even more important in the Chinese public organization. Without leadership support any initiative is bound to fail because they control all the manpower, materials and financing in the organization. Therefore, gaining leadership support is dispensable to the success of knowledge management initiative in China.
- It is widely known that the public sector has limited resources. However, it does not mean that it is not necessary to set up an incentive and reward mechanism in the organization for this very reason. On the contrary, it is even more important to have a sound and effective incentive or reward mechanism in place in the public organization to share knowledge with other people. Therefore, the issue is how to use the limited resources to establish a mechanism in order to inspire creativity in the organization.
- Education and training cut across the whole process and the implementation of knowledge management. Education and training are not confined to the middle managers or staff at the lower level only, but also even more important for the top leaders in the organization. Of course, the content and forms of education and training are different for the senior, middle, and lower level staff. Until this is done, the benefit of knowledge management will not be reaped.

7.3 Managerial Implication

The findings from this research have several managerial implications.

Firstly, the key findings of the empirical investigation on knowledge management provide a chance for the public managers in the Chinese public organization to know their counterparts' perceptions on the importance of, and needs for, and current knowledge management practices and performances of the whole sector. This may help the managers to benchmark their own perceptions and performances, and improve their knowledge management practices.

Secondly, based on Section 6.2.2, the feedback from the China Customs indicates that the framework generally reflects the knowledge management practices in the organization, and could help them have better understanding of the knowledge management. So the framework can be used to train the public managers so that they have better knowledge about the complexities, difficulties, non-linear nature and dynamics of knowledge management.

Thirdly, according to Section 6.2.3, the interviewees claim that the verified important factors in the frameworks are believed to be able to provide guidance and a checklist for the public managers, to remind them of what problems may happen, what factors should be considered at each stage of the process, and to help the public managers to cope with the issues and difficulties in the process and implementation of knowledge management in the public sector. Therefore, the verified important factors can also be used to train the public managers so that their management skills and knowledge can be improved.

Majority of the Interviewees are in the view, especially interviewee No 23, 25, and 31, that the framework can provide guidance for them, but it is also necessary for someone from the top to take the initiative. In another word, leadership support is absolutely vital to the implementation of knowledge management initiative or project. This is the unique

characteristic of the Chinese public sector. Everything has to come from the top and the leadership of Chinese Communist Party is paramount. However, in spite of the constraint in the context of Chinese public sector, people and managers do learn from their daily work, people are regularly trained and educated on the job through coach/apprentice and training model (Donnelly, 2008) in house or off-job through university education but in an incremental rather than radical manner to enhance their capability in China. Formal training, informal coaching and self-paced learning via relevant sources (Luen and AL-Hawamdeh, 2001) are the ways to learn and acquire skills. Self-paced learning is one of the popular ways to learn, especially for those who do not have university degree or qualification in China. Nonetheless, implementation of knowledge management initiative has to come from leaders in China.

Finally, in accordance with the frameworks and important factors, a website can be developed with the aid of multimedia technologies; the public managers may have access to it at any time. The previously mentioned training can therefore be very convenient for the managers.

7.4 Limitations of the Study and Future Research

7.4.1 Limitations

It is commonly recognized that social research tends to be biased by the knowledge background and practical experience of the informants, and the same is true of the researcher. The views of the respondents at the second stage may not be able to represent all viewpoints in this field. Moreover, the findings from the study could be subject to other interpretations.

As with all researches, this study inevitably has some limitations.

First of all, the case selection for this study has its limitations. This study confines itself to

investigating knowledge management practices, issues and difficulties, and important factors in the Chinese public sector, and the main case study is conducted in a Chinese public organization, China Customs. Therefore, the findings from the main study may not be applicable and transferable to countries other than China, because the study is bounded and situated in a specific context of Chinese government organization, although the preliminary findings from pilot study were carried out via interviews in the UK, Australia, and China.

Secondly and finally, the important factors are identified to help or remind the public managers to address the issues and difficulties in the public sector. It is thus undoubtedly a right choice that the public managers are invited to verify these factors. However, it is the staff that mainly do the specific work on the frontline. Therefore, if staffs are invited to verify the identified important factors as well, judgment on the factors, based on the responses from both the managers and staff, may offer more different valuable insights.

7.4.2 Future Research

The limitations discussed suggest an agenda for further research.

Firstly, the important factors have already been empirically evaluated as applicable for the public organization. However, the important factors have not been verified by other Chinese public organizations. Therefore, the verification of the important factors is suggested to be carried out for other Chinese public organizations.

Secondly, knowledge management is new in China, especially in the Chinese public sector. Therefore, knowledge management is a new concept and management practice in China Customs. Currently knowledge management is done in China Customs in a fragmented way and without deliberate organization. Therefore, an initial intent has been agreed between the author and China Customs that joint knowledge management project will be carried out in the future in China Customs to help them implement knowledge

management. The author will participate in the design of knowledge management plan to implement knowledge management in the Customs region for a pilot project. A comparison of the organization before and after the implementation knowledge management plan will be made in the later stage. This Action Research project will provide information and insight for other Chinese public organizations.

7.5 Research Reflection

There is a growing recognition that qualitative research should be scrutinized and reflected through self-critical reflections. Revealing the relationship between researcher and the object researched can help researchers to have better understandings of the social context in which the research occurred and people engaged (Johnson and Duberley, 2000). In the beginning of this chapter, I began to reflect upon research process involved in this research to evaluate the trustworthiness. In this section, by adopting reflexivity approach (Johnson and Duberley, 2000; 2003), I will reveal how my social location, my beliefs, values, feelings affected this research and how other participants involved in this project impacted the research outcomes of this study.

7.5.1 Epistemic Reflexivity

The major challenge and best way to understand good qualitative research is to get qualitative researchers involved in critical self-scrutiny (Manson, 2002). Epistemic reflexivity refers to the systematic attempts to relate research outcomes to knowledge. It explores the ways in which the researcher's involvement with a particular study influences, such as the researcher's own social and historical biography, experiences and paradigm (Johnson and Duberley, 2000; Easterby-Smith and Malina, 1999). Through epistemic reflexivity, the researcher aims to make *the analysis of analysis* (Johnson and Duberley, 2000) and the *interpretation of interpretations* (Alvesson and Skoldberg, 2000). To provide more transparent evidences to explore the relation between myself as a researcher and the object researched in this study, I try to make self-reflexivity in a

critical manner. However, revealing the self is not an easy task because it involves exposing the subjective and individual experience behind the work to respondents and research audiences.

Reflecting on the intellectual journey of this research, my social constructionist paradigm employed throughout this research has been guiding me on constituting the knowledge for this study. At the early section, I explored how my personal beliefs and initial assumptions shaped this research topic and structured the research activities by reflecting ‘who I am’ and ‘where I am from’. On acknowledging the proposition of constructionist philosophy, I claim that meaning (or truth) does not exist without a mind. All meaningful reality is socially constructed (Crotty, 1998). Accordingly, I strongly believe that social phenomena and their meanings are *continually* being accomplished by social actors. In other words, knowledge should be justified accompanying the changes of social contexts. As meaningful realities are socially constructed, people are inevitable viewing phenomena through lenses bestowed upon them by their own culture (Crotty, 1998).

In retrospect, my initial assumption related to the research problem is that public managers presumably act differently compared with managers from other countries in management of knowledge, particularly those who are from Western countries. I agree with Crotty (1998) that culture is liberating, but culture is also limiting. It sets us free but at the same time it sets boundaries. The theories and concepts created on the basis of Western cultures (most of the researchers in this area are westerners) must be moderated. Reflecting upon this research, the outcomes and my personal experience of this research firmly consolidated my social constructionist paradigm. Consequently, the cross-culture comparisons of this study make me aware that the same phenomena may have different interpretations at different time and in different places (different context). Critical perspectives should be emphasized in constituting knowledge in cross-culture research.

Moreover, I have been struggling with how I identify the role my multi-culture background played and how I judge its impact on this research. As a native Chinese, I

spent 28 years of my life studying and working in China, and I am still an associate professor in a university in China, it is apparent that some Chinese cultures have already firmly embedded in my mind. However, I also used to work and live in America for two and half years and the UK for more than eight years. Western cultures also inevitably have some impacts on my thinking and behaving. At the beginning of the research, my mixed Chinese-Western culture background made me aware of how this situation was going to impact my research, is it to be positive or negative? Reflecting upon the interviews, after interviewees addressed their answers for a certain question, Some of the respondents think I am a Chinese, others think I am only a partially Chinese because they believe that my thoughts inside are somehow different from them. I do not know much about China since I have away for such a long time from China. Therefore, different attitudes arise during the interview. They are either cautious or open.

Another lesson I learned from this research is that an interviewer's social position is important for making Chinese respondents opening up during the interviews. I used to study Customs administration and I have so many classmates working in China Customs. Some of them are very senior official in the organization. During some respondents asked me about this background because I was introduced by some officials to do interviews with them. This past social role of mine became a fear in some ways for some respondents. Reflecting upon this intellectual journey, from my observations and personal experience, my mixed culture background and past social position played a positive role in this study as I have a better understanding of these respondents due to my specific multi-cultural background and different social roles.

Another great challenge of this research for me is how to ensure that 'my voice' did not dominate over 'respondents' voices' in data analysis and writing the thesis. Although most of the interviewed managers treated me as 'a Chinese academic researcher' studying at the university in the UK, my multi-culture background and past working experiences made me very uncomfortable when I first started to interpret the interview data. In producing the data analysis, I had always been sensitive to the questions: *Whose*

interpretation? Whose truths? It is apparent that my mixed cultural backgrounds and international working experiences made it impossible to divorce myself from the process of this research. In retrospect, although I have been tried hard to make sure that respondents' voices were heard; their truths were presented; my interpretation of their interpretations were realistically conducted, it is almost certain that I interpreted the findings somehow through the lens of my own cultural values and beliefs. It is therefore that I am still not so comfortable with my successes at this point. In writing the final report, I have made great efforts to eliminate the identified information across different chapters.

So far, I have discussed my engagements in epistemic reflexivity (Johnson and Duberley, 2003). The reflections on my own social role and how it affected the form and results of this research show that the self as a researcher can never truly be removed from the research. The discussions above provide research audiences with an honest account of how I dealt with my experiences and beliefs while confronting difficult situations throughout this study.

7.5.2 Reflections on Methodology

In Chapter 4, I have described the details of data collection and data analysis during the research process. This section will make further reflections on the research methodology by reexamining the design of the research methodology and methods. In addition to that, how my *research behaviors* were monitored throughout this research is to be discussed.

Reviewing previous studies, as most of them were conducted by surveys, researchers often limited influencing factors which were pre-hypothesized from a positivism perspective. However, by doing surveys, participants had little chance to reflect influencing factors comprehensively (factors have been already predefined by researchers) by filling the questionnaires. Considering the public sector, it is wondering whether all public managers understand the questions when completing the questionnaires. Having

been mentioned in methodology chapter, this research took great consideration of interviewees' understanding of theoretical concepts and specific terminologies related to knowledge management. The reasoning behind this was that respondents' understanding of the research questions directly influences the outcomes of this research as they are the 'meaning makers'. In retrospect of the research process, this issue was noted at the beginning of the research design. Although conducting the pilot study boosted my confidence to produce a piece of quality research work, the *interaction of asking questions and getting meaningful answers* still was a challenge for me during the research process. To ensure the spokespersons' voices were heard accurately, I tried to pass all transcripts back to the respondent, but this was not possible to all respondents, some respondents were too busy to read the long transcripts. To complement this, I tried to phone them to discuss the outcomes of this research at my post-research stage.

Reflecting upon the research process, another important lesson I learned was that building up the reflexive process for each of the interview is essential for a good quality research as it enables researcher justify semi-structured interview questions effectively. This is particularly important for a new researcher. After each interview, I produced a research summary report in addition to recording the general interview information: who, where, when, how long of the interview, etc. I also reflected both researcher (me) and respondents' *behaviors* during the interview in this summary report. First, I checked the notes taken during the interview, and reflected participants' attitudes and reactions. In this reflection process, I paid attentions to respondent's interests and involvements of the interview; and tried to reflect if there was particular question I asked that might have offended or embarrassed the respondent. If so, I would think more ethical issues and justify my questions for next interview. From the researcher's side, I made a critical self-scrutiny to reflect my actions and role in the research process after each interview completed. As a part of the reflexive process, I reflected on the interview by asking myself questions of *have I collected data I want? Did I use right strategies or approaches for my data collection? Were there anything happened beyond my expectations during the interview?* Building upon answers of the reflections on these issues, I listed all important

points which I should improved in the next interview. As a new researcher, I found this interview reflexive process is extremely useful for producing good interviews during the research.

In short, building upon the epistemic reflexivity and methodology reflexivity, I conclude that offering a more transparent account of what has happened in the research process contributes more credits to the trustworthiness of the research findings. Most importantly, in my experience, reflexivity should not be carried out only after the research completed, reflections during the research process are even more valuable. Differently, the former reflexivity offers a different way of understanding of researchers and respondents' experiences, it cannot change what happened. The later one enables researchers to conduct their research in more effective ways, and improve the quality of the research. Such as the interview reflexivity carried out after each interview, it helped me dramatically to make my next interview getting better and better. By providing above reflections of this research, it is evident that I have made every effort to produce a reasonably highest quality research throughout this social research process.

7.6 Professional Development Reflections

This research journey has been challenging me since the first day I decided to become a PhD candidate. As a mature doctoral student who pursues lofty professional goals, my life in last 7 years has been filled with sorrows and joys; successes and failures. Reflecting upon the professional developing journey I pass through, there were not only successes but also difficulties and challenges.

7.6.1 Feeling of Success

Professional development focuses on personal development in a specific area. It enhances people's learning and additional skills in a particular area to help with a person's career advancement (Turner, 1996). To complete a PhD will be a great help to my teaching and

research career in China. Purposely, one of the initial motives of doing PhD was to improve my individual professional development. Retrospectively, after 7 years struggling and attempting, I believe that the following factors have made my PhD successful and rewarding in relation to my professional development.

Development of understandings of knowledge management. Theoretically, in completing this project, comprehensive literature review has been done in relation to knowledge management in both private and public sectors. This research problem was identified and deriving from the pure theoretical gaps. On one hand, doing critical literature review helped me to develop a comprehensive understanding of knowledge management theory from the theoretical perspective. On the other hand, from a practical standpoint, the findings of this research enable me to get more insights to knowledge management practices from the real-life case that can benefit students I teach in my academic organization. Combining above two aspects together, this project comprehensively and systemically enhanced my understandings and reshaped my knowledge about knowledge management.

Enhancement of practical research skills. At the beginning of my PhD, research skills were a great challenge for me. Through appropriate training and practical exercises during my PhD study, I have mastered qualitative and quantitative research techniques, especially qualitative research. Consciously, this research involved massive information seeking and extensive time has been spent in conducting interviews for data collection. In return, these practical research exercises have enhanced my interview and communication skills that are most important capacities for managers. Most valuably, this research developed my logical and critical thinking, and taught me how to solve problems in a critical and reflective manner. This is evident by my Western critical culture awareness. As a Chinese, I was taught to be told rather than asking since I was young. My embedded Chinese culture makes me find it difficult to challenge authority and criticize other people's work. However, this PhD journey made me understand that questioning and criticizing are more important than just listening in constructing new knowledge. In this

point, I was taught to be critical in Newcastle Business School.

Linkages of the career development and the PhD research. This research has been challenging me in how I can develop my theoretical knowledge and practical management skills to promote my career development. Reflecting upon the whole research journey, the PhD not only makes me feel that I have achieved a high academic standard, but also provided an opportunity for me to transfer the acquired knowledge into practice, and armed me with the experiences and skills to manage my professional career better. This conclusion could be built upon the following evidence. First, the skill pack developed throughout this study enhanced my job performance. Now I can write conference papers and journal articles after a few years' PhD study. With the processing of the research, I found that my information gathering and processing skills, negotiation skills, etc. have been continually improved. For example, the communication skills I built through interviews in this research underpinned my competitiveness in teaching and social occasions. Furthermore, through this research, I have already built up my personal networks. During the interviews, I made a good relationship with many managers. These networks provide a platform for further research to enhance my professional development in the future. Finally, knowledge of knowledge management developed throughout this research will be transferred into my teaching. The findings of my PhD research will benefit my teaching significantly.

Reflecting upon my PhD research journey, it makes me think 'Does the degree of completion equal success?' Apparently, the completion of PhD is an important achievement. However, to me, the learning process perhaps is the most valuable thing. By learning in doing, I was taught how to be strong, insistence and positive. All these qualities are essential for my continuous personal and professional development in the future.

7.7 Chapter Summary

This chapter has outlined the contributions of this research to both practitioners and policy makers in the Chinese public sector. In particular, it brings great insights to public managers in managing knowledge in China. Moreover, this concluding chapter has also highlighted my epistemic reflexivity and methodology reflexivity. In doing this, I disclosed myself as a new qualitative researcher in a critical manner. It offered me an opportunity reflecting upon my research behaviors during the research process. Furthermore, I also reflected upon how my PhD journey incrementally developed my advanced management competencies and advanced research skills.

Going through this learning journey has made me realizing that leaning is never-ending. As a new researcher, my research experience taught me that qualitative research is confusing sometimes, just as life is confusing. As a PhD student, I admit that the journey was tough and the whole process was tedious and agonizing, nevertheless it provides a great opportunity for me to listen to practitioners' experiences. Having a chance to talk with these practitioners enables me to understand my research area from a real world. It is valuable and worth it. To end this PhD research journey, I want to say that after rain comes the sunshine. Without doubt, this PhD journey has opened a whole new world for me as a new social researcher. This learning journey has taught me that it is important to become a life-long learner. My professional learning journey should never end in the rest of my life. My PhD experience makes me treasure.

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Appendix A

Interview Questions for Pilot Study

BACKGROUND INFORMATION

1. Are you familiar with these terms?
2. Does your organization use different terms for these definitions?
3. If so, state the list.
4. To what extent the concept of 'knowledge management' is known to the staff in your organization?
5. Do you have a knowledge management initiative in your organization?
6. To what extent has there been organizational acceptance about knowledge management at the management and staff levels?

KNOWLEDGE MANAGEMENT STRATEGY

7. Do you think there is a need for your organization to take active initiative to implement knowledge management practices?
8. Does your organization's overall goal include knowledge management explicitly?
9. What knowledge management activities are carried out in your organization?
10. Is there any organizational arrangement for knowledge management?
11. Is there any training practice in your organization?
12. Is there a special budget allocated to training in your organization?
13. Is staff encouraged to move regularly within your organization to facilitate knowledge sharing?
14. Are there specific knowledge management-related examples, activities, practices, functions, or capabilities that you consider to represent your best knowledge management efforts?

KNOWLEDGE MANAGEMENT PEOPLE

15. Is there a knowledge sharing culture established to support effective knowledge management?
16. Which aspects of your culture seem to be barriers to effective knowledge management?
17. What insights or lessons learned have you experienced thus far with respect to culture changes in your organization?
18. Has your organization taken steps to motivate and reward people and/or teams supportive of effective knowledge management?

KNOWLEDGE MANAGEMENT TECHNOLOGY

19. What purposes do you use IT for?
20. Does your organization have a “formal” Webmaster function?
21. Which technologies do you use (or have at your disposal to use) to support knowledge management initiatives?
22. Which technologies do you plan to use in the future to support knowledge management?

CRITICAL FACTORS FOR KNOWLEDGE MANAGEMENT IMPLEMENTATION

23. What are the factors do you think it is important for the improvement of knowledge sharing and knowledge transfer practices or the good implementation of knowledge management strategy in your organization?
24. What are the difficulties encountered in the implementation of knowledge practices?
25. What are the resistances in the implementation of knowledge sharing practices current in use?
26. What do you envision as the top two major benefits of using knowledge management in your organization, from a strategic point of view?
27. How is ultimately accountable for the strategies? How different do you believe that these activities are as opposed that in private sector?
28. What incentives are there in your organization that motivates knowledge sharing?

29. Are there any other points you would like to make or areas that we have not mentioned that would help us understand your situation with regard to knowledge management?

THANK YOU FOR YOUR TIME AND PATIENCE!

Appendix B

The Interview Protocol

The protocol is referenced during the process of the semi-structured interviews: not all of them are asked, nor are asked questions all listed either. The sequence of the questions is not necessarily followed as they are listed here.

Introduction

Greeting

Explanation and reminder of the purpose and focus of the interview

Readdressing confidentiality of the interview

Asking permission to tape-record

The following are the details

Thank you very much for agreeing to be interviewed. This research aims to collect information about how you are engaging knowledge management activities and identify some important factors in the public organization in China. Because research on knowledge management in China is very few and even fewer in the Chinese public organizations, therefore I would like to introduce some of the key basic terms and concepts with regard to this research in order to facilitate better understanding and conducting of the interview, terms and definitions are provided as follows:

Data

Data consists of isolated facts and figures. It is collected in large quantities by most organizations.

Information

Information is data that has been placed in context. It can be described as data that makes a difference.

Knowledge

Knowledge is broader, deeper and richer than data or information. Knowledge, within organization, often becomes embedded not only in documents or repositories but also in organizational routines, process, practices and norms.

Knowledge Management

There are many formal definitions of knowledge management in the literature. However, in terms of the wide range of activities that knowledge management encompassed, 'Knowledge management maybe defined as a systematic and integrative process of coordinating organization-wide activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups in pursuit of major organizational goals.'

We hope to collect some information about how your organization is engaging knowledge

management activities and its process, key influential factors and your comments.

We further confirm that the information we collect will be treated with strict confidentiality and anonymity. It will not be divulged in a disaggregated form, or used for other purpose except for this research.

Would you have any objections to the interview being tape-recorded? This would help me to analyse interview result afterwards. It also helps to preserve the accuracy of the data collected.

Interview date and time:	
Interviewee:	Job title:
Organization:	Add:
Tel:	
Fax:	
E-mail:	
Background information	

Background Information

Part 1: Nature of the work and current situation of knowledge management

1. Currently how many people are there in your department? What is your position in the organization? What is your nature of work?

2. Is there any department or people in charge of knowledge management in your organization? If yes, then what is the scale, number of department or people involved and main responsibility of the work, and the status in the organization?

3. In your opinion, what are the meaning of knowledge valued in the organization? Please rank them by the importance. Are these items managed? How are they managed?

Part 2: Question for Knowledge Acquisition

1. Are there anyone in charge of collecting and clarifying work in the organization? Can they provide you with multiple knowledge sources and content of knowledge? And what are the sources of knowledge?

2. What are the knowledge to be applied in your work in terms of the nature of your work and business requirement? When you encounter any problem in your work, in what way do you get the knowledge and information needed for solving the problem?

3. What kind of educational and training courses are designed in your organization? Are they helpful your work and knowledge learning? Do they meet your requirement?

Part 3: Questions for Knowledge Creation

1 What is the incentive mechanism in your organization to encourage staff to contribute their wisdom and experience and facilitate the creation of knowledge that is favorable to

the organization?

2. How does your organization build up cooperative and collaborative relationships with other departments and agencies and think-tanks to create knowledge? Who and what are they? Who makes the decision about the research subjects?

3. In what ways do the civil servants learn in the knowledge creating organization?

Generally speaking, how willing are they to learn and do they have the ability to learn?

Part 4: Questions for Knowledge Storage

1. Where is the relevant knowledge of business stored in your organization? Are they stored either in database and information management systems or in the experience and memory of the employees, or embedded in organizational structure and systems?

2. Is there any information infrastructure or databases available for data and information sharing? What are the functions? Can they be made full use of? Are the databases helpful for decision making in the organization and how are they maintained?

3. How your experience and knowledge gained from the work and education and training stored? Are they systematically put into word files and stored in the database or in the mind and thus become a part of professional capability?

4. Can the stored knowledge and documents be collected and classified automatically?

Part 5: Questions for Knowledge Sharing/Transfer

1. Through what channel is your knowledge exchanged and experience shared? Have you ever use knowledge diffusion channel (including informal communication methods, seminars and workshops or network systems) to share your experience and knowledge with members of the community?

2. What are the knowledge diffusion mechanisms (i.e. information, training course, knowledge community, and library database, etc.) available in your organization? How do they work and how effectively?

3. Is it very common for people to communicate messages and deliver information through information technology in your organization? Has a community relationships been established among those who often use IT communication?

4. Has there any educational and training course been designed to enhance the information ability? Have they encountered any problem during the study and application?

Part 6: Questions for Knowledge Application/use

1. Can you find the knowledge you need in the database in the short time when making decision?

2. Possibly there are many case studies have been carried out every year in the organization, and are the outcomes of the studies and suggestions helpful decision making and quality enhancement?

Part 7: Questions for Enablers for Knowledge Management

1. How do you think of the organizational culture in your organization? Has mutual trust been established as a basis for experience sharing and exchange or 'knowledge is a personal asset' is widely perceived in the organization?

2. What incentive mechanism would make you more willing to share your knowledge and skills, an ideal environment for knowledge development or a system for salary management?

3. Has your director in your organization given sufficient encouragement and support in establishment of internal talent database, promotion of lifetime learning and resource allocation?

4. Has attention been paid to the needs and wants of the civil servants at the different level of the organization with regard to the content and types of education and training?

5. Finally, to build up a knowledge management organization, I would like to ask you, can

you make any suggestion about knowledge management process, application of IT, organizational culture, and talent development and training etc.?

The End of the Interview

Express thanks for the interviewee's comments and opinions.

Appendix C The Transcript of Interview 30

Could you tell me about your job and position in your organization?

Vice Division chief of the Department of Enterprise

I joined the Customs region in 1990. At that time management of enterprises was just for registration of enterprises, just like what we have to register first in a hospital when we see a doctor. The task is very simple with strong operability. An additional task is to be responsible for the affairs regarding qualification exams for Customs declarant', at that time the exam papers were prepared by local Customs houses themselves, not like what we have been doing at the present that the papers are prepared uniformly by GACC. The exam for such kind of authentication of qualification was not very formal at the time. However, the Chinese enterprises have been going through a knowledge accumulating and growing process with the development of economy in China and it has become more and more formal. On the one hand, the numbers of Chinese enterprises become more and more and on the other the resources to be allocated for Customs supervision become more and more limited in relative terms, which make it the work for risk management (RM) even more important than ever before because the starting point of RM is to solve the problem of disproportion that exist between the resources and objects of supervision. In my opinion, enterprise management provides services for RM because it also provided services to the supervision work. Under the new situation RM is very important in the work of China Customs, so enterprise management can also provide services to RM and furthermore a higher requirement is needed under the present situation for enterprise management to provide the services to RM. Enterprise management should provide even better services and we have been thinking to do some new work, such as law abiding management of trade. I think department chief Miao has introduced some of the work in this aspect. Let me introduce the current situation first.

The work of enterprise management can be divided into the following parts: First, approving the declarant enterprises. This is something similar to registration at the hospital. Namely, the enterprise would be approved and put on the record if the enterprise has gone through all the necessary procedures with other departments concerned and qualified for the application. This is no difference from what we had done in the past. Second, managing exams for Customs declarant because the exam has become more and more formal and it has been arranged nationwide, and the rate of passing the exam is not very high. As far as the applicants are concerned, the qualities of these people are very high. However, we are facing a problem that the management of the declarants the market and their behaviors are not separated from the practical supervision works in the Customs. Now we are slowly doing the work in this regard to enhance the quality of the declarants through management. We have also been doing the information-based works and we have found one problem in the meantime. That is, the operation and data must be standardized if the information-based level is to be enhanced. In this case, where does the data come

from in the Customs? It comes from the outside. Take the declaration form for an example, the information originates from bill of lading, invoice, and sale contract and all the information in the enterprise comes from the outside. Take supervision of certificates for an example, the information comes from the economic and trade departments or other administrative departments related to the economic and trade departments. All the information gathered here in the Customs and therefore the standardization of information is very important. The Customs declarants cannot do the work well if they do not realize this. That is the main reason why we have a work to manage the declarants. Of course it is still in its early stage and only started last year.

Did it started only in the Customs region or nationwide?

Nationwide.

One advantage of doing this is that, as I just said, the prerequisite for information-based management is to have a standardized management. The purpose is to compress the space for false declaration, which is to prevent nonstandard and false declaration from happening because it is very difficult to tell whether it is a true or false declaration just by data. Only the standardization is enhanced and the space for false declaration is compressed can the difficulty of identification by the officers on the work site be reduced. Some of the works must be done in advance or it will cause more troubles for other works at later stage, just like how vegetables are washed, that is , it is very hard to wash clean after vegetable were cut. Therefore we have been trying to do the standardized works ahead of times. The characteristic of information-based management is that the more in advance the standardized works is done the more efficient the works are at later stage.

Then what is the relationship between the information-based management and RM?

I can only talk about my own views. I have one issue in mind when talking about this relationship. Everyone talks about information management. There are two concepts in Information management. One is data management and the other is information management. I think it would be better to make it clearer if we talk in this way. I feel the biggest difference between the two is that, data is the information with strong structure and information, to my understanding, is impossible to have a very strong structure. This is information in my sense. Data collected from Customs declaration forms, in my opinion, is only data management, a management of data. Because information does not have a very strong structure, even hearsay could be useful for our management, therefore I think it is a dimension of information management if I do something, say data.

So your RM is based on information management?

I feel that although we have been doing RM for several years, yet not in a systematic way. RM is something like, to my understanding, management of methodology because the focus is placed on the method. In other words, a management method or measure is taken

to deal with a management object with certain features and certain extent of interfere is decided for it. It is something more quantitative. I feel that it is just quantified management. For example, assume that my enterprises are divided into five parts and probably the third part is the biggest part of the five, then the extent I interfere with these parts is different. Take another example, I have done some preparation and later test and validation works for standardization, in this case, the interference in middle period could be less. Unfortunately I do not have the time to do so and the interference could be little stronger. My feeling is that one of the focuses of RM is on technology. My personal opinion is more focused on the application of statistic methods in the Customs business operations, such as sampling and after analysis. These works are very important in RM, and some other works too.

Have you ever heard of the concept of KM before?

I just heard of the term but not so much about the meaning.

From what you have said, I think it is better to clarify some concepts in KM, such as data, information, and knowledge?

There are two types of knowledge, explicit and tacit and the conversion between the two. KM is done through several processes, such as knowledge acquisition, storage, sharing, creation and application and use. I will ask some questions about KM.

From what I understand so far, there is no one or department that is specially responsible for the implementation of KM in your organization ?

No one.

It is very common in China. From your own experience what knowledge do you think are important in your work?

How shall I put it? It seems hard to tell.

Now you are doing the work of managing enterprises and declarant in the Customs, how about the knowledge in this regard?

Of course they are, but as far as the work is concerned they aren't. I feel that they are all details.

I am a graduate from Qinhuangdao Customs School, a technical secondary school, not even a junior school. I joined The Customs region in 1989, formally started in 1990, a whole year probation. My experience is that, it was very short of hands in the Custom because of reform and open policy adopted in China so two years of graduates left school one year earlier than they should have had studied to fill the vacancies in the Customs.

At that time my personal experience was that I studied some administration courses in high school and remembered by heart, but I really did not know why and what, knew

nothing. I did not realize something until I worked in the Customs. I reviewed all the textbooks from the secondary school and had the kind of feeling that I knew something new by reviewing what I had studied before and gradually I become realized that a system of science come into shape. Although I have passed all the exams in the school, yet I felt I knew nothing. Only when I worked in the Customs then I started to know something about the work and become interested in informationlization , which directly arose out of the understanding and mastering of knowledge about computer. In the very beginning it is purely out of curiosity and interest, but realized later that it could be a great help to my work. A non-professional computing personnel like me, I find it more useful to read book by myself and ask questions if I do not understand them, not really by going to computing classes. I think it is the best way for me to study because it is easy to understand if someone who knows computer very well just use a few words to answers my questions. It is very efficient and effective.

What we come across in the beginning in our works were documents and what the technical personnel come across were computer programs. Another thing that we have little access to is data. After data is digitized, the technician will pay less attention to the data. What he does is to write the computer programs and how it is operated and then he does not care about what would happen next. Who will pay attention to the data then? It should be business operation personnel who will pay attention because it will have impact on the management. Therefore I have done the work, which is to apply the accumulated data to work. After the work is done we have found many problems. For example, we can find some loopholes, nonstandard situations, and many cases, etc. Like what you just said that there are two types of knowledge, explicit and tacit, in my opinion the two concepts are relative. What is tacit and explicit knowledge? I would think that on the one hand, it is very difficult to solidify tacit knowledge for others to master when one's cognition is not high enough; on the other hand, it is totally possible for one to convert parts of tacit knowledge into explicit knowledge when one's conclusion and understanding are deep enough. Therefore, I think the concepts are relative.

I think you are right about this. I only introduced about the concepts, but about the conversion of the two types of knowledge. Two Japanese scholars wrote a KM book and in the book they propose a model called SECI model.

Let me take an example, we have a case in Yantai Customs house that the Customs need to issue a tax certificate, certifying that the goods has been exported so they could use it to get tax rebate. At the time they produced dozens of declaration forms for verification in the stamp-proof department. People in the department said that they were no problem at all, everything was in good order. Both the stamp and stamp pad ink were real. So they asked me to have a look at it. Once I set my eyes on them, I knew they were false ones, but I just could not tell why and where they were not right.

This is your experience.

This is tacit knowledge as you said. If the enterprise were succeed in cheating in the case, then they would have had got 8 million of tax money. At that time I was thinking why I could see through the cheating case and reviewed the whole process after the event.

However, few people do this sort of work as to draw inferences about other cases from one instance. I have tried and it is very effective. Why? Because there many things that may be out of your expectation and I feel that doing case work needs a huge background input (investment). In my view, the attainment of the person who deals with it must be high enough and very experienced. However, it is not so easy to produce person with high level of quality under the present situation in China Customs. Not only in China Customs but also in the Chinese administration exists the problem. Why? Because everyone is in pursuit of efficiency, which will lead to the fact that the business links on the work site have been cut in an extremely clear manner, just like the worker who works in an assembly line, because of this, it is very difficult to locate the simple work in the whole. What is the structure of the whole? There is too little opportunity for it. One may do the work for several years before he is shifted too another and he may not pick it up easily because there may be some links between the two works and even he may not know there are some links exist in between. All the public sector organizations are like this. I think I am quite lucky because the Customs business operations were divided into several parts at that time and I had the opportunity to work in the departments and more opportunities to learn more from the works. I personally think this is the process. Therefore, if business operations are divided into the very details, it is not favorable for the development of the personnel, without whom the cases they worked out would not be effective.

Handling a case requires a high accuracy. I am sure if other administrative departments are the same or not, but in the Customs handling is a very serious matter. Whether the basic or detailed information, personal notes and the attached word documents, they all have a good integrity. One could find so many things inside if he or she wanted, but the traffic is so huge that to find them is hard. However, it is worthwhile to do the work.

What are we going to do after the information is shared? We want to provide an information sharing platform for those who want to learn from online services. Although one pieces of information may not be useful or provide guidance to the work at hand at the time of sharing, yet the information is shared on the platform, just like the internet anyone can learn something from it whenever he or she likes. Furthermore, we help them to search. Why do you think we add logic marks on it, why do we standardize the content? It is only to help you to search for information and help you to prepare and pave the way for making your own conclusions and accumulations of experiences. We are doing the work not for quick success (quick fix), like what other departments are doing information management for. What we are doing is not trying to run before we could walk. For example, I have done an analysis report just for investigating a case, this is quick fix. Of course we cannot say it is not right. It could be significant and correct, however I still think we cannot go without this and the two should stay at the same time.

Is there anyone who is doing the work on these cases?

Not at the moment because we don't have a very good carrier and there is another problem that there exists a barrier between the departments even within the department. This is not business operation issue and not technical issue either, but a management and philosophic issue. We have been trying to have a good grip of information as we can and also trying to let everyone have them, but we are also afraid of information disclosure, so what we can do is to delegate to certain extent to provide an environment for everyone. We can not guarantee that it is prefect and everyone will be satisfied. Maybe it will not work out, we don't know.

The people you will choose for doing the work on the cases must have a quite comprehensive understanding and knowledge about the Customs business operations because it is not only for one department but for the whole Customs in China?

The reasons why we would like to do the work it because we already have a basis. We have the people and the structure. We have something to do with the organizational structure. There used to be the Department of Investigation in the Customs, now the department has been revoked. The three divisions of risk, audit-based control and enterprise management within the department were made independent and formed the new departments. Several colleagues of ours used to work in the department and they have extensive experience of working on trials and also are very familiar with all the rules and regulations, and procedures. I think they are qualified for the work that is closely to what they had been doing in the past. What is good about it is that their business experience can be better utilized. Because of this I think it is our advantage. We have the right people for the work.

Is there anyone in charge of work such as information gathering?

The present situation is like this. We are planning to issue a whole set of rules and regulations after adjustment of the system is done. But right now it is hard for me to imagine what it is going to be like. Why? Because if there is someone especially in charge, then the source of information could be restricted and if not, then I am afraid that the quantity of information may be affected. So we are not very clear about this, but we are managing to do the work well. The standard is secured by the system and the sources and the quantity of information may be guaranteed by management incentive mechanisms. Of course the mechanisms could be positive or negative. I will give them praise if they do well and criticism if they are not doing well.

Do you have incentive mechanism in the Customs?

Yes, we do have one. For example, we have performance evaluation in The Customs region region. I think we have a set of incentive mechanism. Office of The Customs

region publishes government affairs about all the departments at regular intervals and we also can adopt its model to see how things are done in the business departments. We can take it as the indicators for the annual performance review, not only the quantity, but also the scores they gained. For example, the analysis report scores 5 and a simple trend report scores 1. It will all depend on the efforts made in the process so we can use the total scores gained to make an overall evaluation.

Who does the performance review, every department or the personnel department?

It works this way, but I am not sure if it is right or not to put it this way. I used to participate in the evaluation group in The Customs region, of course not participate in the exam, but as a member of evaluation group to participate in making the rules for the performance evaluation. Originally the members of the group think that a set of rules should apply to the entire region, including all the Customs houses or offices under the region because we mean to evaluate the performance in the whole region, not by each department. But the proposal was rejected in the meeting attended by department chiefs or above. Everyone thinks it is necessary to have the performance review, but they also think that it should be done by each department. Take our department, enterprise management, for an example, we have to review the performance on the work site and the department of Customs duty has to evaluate the performance on the work site in their department and likewise control and also do the supervision department and processing trade department.

Do you think one set of rules can apply to all the departments?

I think it can, but it will depend whether the rules are reasonable or not.

For the system to work, all the departments have to propose the performance indicators in the first place and then to be decided by the leader because the making of indicator has to take into account of integrity and accuracy for calculation and rationality of business operations. This has to be combined with business operations and therefore the indicators have to be proposed by the functional departments and decided by the leaders. Why are they decided by the leaders, to be exact, by the director? As an administrative organization, different periods have their focuses. To achieve this, the leader must have a say in the matter to decide which area need to be strengthened and weakened for the focus to be effectively guaranteed. However, we are still in the early stage so it is better to do the performance review respectively by each department.

So you are still doing the performance respectively by each department?

Yes. The disadvantage is that some of the performance indicators could gain benefits for one department in many aspects on the one hand if they do well on these indicators, and they also can put the department in a disadvantaged position on the other if they do not do well. Or some of the departments think it is useless even if they try their best, so they may

as well put their efforts on other aspects and the chance are they could be doing better.

Where do you usually get knowledge that is needed for your work and business operations?

I feel knowledge come the following sources. First, it comes from laws, rules and regulations. This is indispensable. Second, it comes from the analysis report of data at hand. Third, it comes from outside, including book, things on the internet. For example, I used to read a lot when I was worked in the classification department. Why? I used to have several apprentices then and I told them not to ask me first the item should be put into which category, I would not tell them even I knew how. I asked them to translate the invoice in English into Chinese and have a better understanding of it before asking me question. They would not understand them anyway if I had had told them earlier. What I was doing is to let them fully understand and have their point of views before asking any question.

When you encounter any problem in your work, in what way do you get the knowledge and information needed for solving the problem?

It varies. Each department has its own ways of doing this because of nature of the work involved. Who will encounter many problems in the Customs work? It is the officers who work on the work site because they work on the spot and encounter all kinds of problems everyday and they don't know how to solve them. When they run into any difficulty or problem, they would solve them if they could. If not, then they would turn to the functional departments in charge for help. If the problem relates to classification, then he should turn to the classification department and department of duty collection for help. The functional departments answer the questions when they can. If not, then they would report the matter to GACC and see what they would say. The hierarchical structure is rigid and we can do nothing about it but follow.

Are educational and training courses designed for the Customs officers in your organization?

We have such courses here. Each functional department has one or two training class every year, purely for business operations. We say nothing about anything else but the trainers, who basically are divided into two parts. One part of them is from within the Customs and the other from outside who are related to business of the Customs and experts. Take the department of audit-based control, usually they would invite people from banks and from accounting firms to give lectures on the relevant knowledge, and the department of processing trade would invite people from the enterprises to give lectures. We are doing quite well in this respect and we have training programs regularly.

Do you think they are helpful to your work and knowledge learning and they can meet your requirement?

How shall I put it? I feel it all depends on the person because it is up to the person to make the efforts. The environment is same to all and why some are doing better than others?

Is there any the incentive mechanism in your organization to encourage staff to contribute their wisdom and experience and facilitate the creation of knowledge that is favorable to the organization?

I feel that we have similar channels but it may not be effective. Why? For example, we Customs Association and they have a journal, in which it publishes many articles and papers. I think it is a good thing, but it depends how the journal is run. There are so many journals around and some are good and others are so good. It is not that there is no proper channel but it is not done well.

Have your organization built up cooperative and collaborative relationships with other departments and agencies and think-tanks to create knowledge?

We used to have but I think we do not have enough experience in doing so. We used to cooperate with a software company to do data mining. I think it has something to do with innovation, in a sense, but it was not effective then. I think probably something is wrong with the methods, not the direction because we did not know very well about data mining at the time.

Let me talk about my understanding. As I said earlier about why we had distinguish information from data because it was better for us to understand and engage in data analysis. I personally think I am quite experienced in doing data analysis. My way of doing data analysis is perhaps empirical one, which is to use the best of experience to see data if it has my experience translated into a search language and further to see how much it meet my experience. This is something guided by subjective experience, which means that I have perceived beforehand that a law exists in the data. But since the volume of data is so huge and the combination is so many that the problems emerge with it. Many things (information) that cannot be seen by the naked eyes are hiding in the data so it is necessary to use the statistic methods or tools to do the work, which, in my personal opinion, is called data mining. The only difference is a matter of degree in the data mining, deep or shallow. Some of the tools or methods used for data mining may be top or low class, but I don't think it is empirical data analysis; it is the data analysis by mathematics statistics. Likewise, so is information. The information industry should also have a set of data mining tools; of course it is empirical data mining and hi-tech mining too. Some people think the text analysis is same as hi-tech data analysis.

You can use software to analyze the tex?.

To put it into category. Yes.

Now I am thinking these things may be high class. At the time we cooperated with someone to do data mining. We feel that we give them the data and they give us a set of laws, but how shall effectively find out some cases through checking work? I don't think we started wrong. They gave us a model for us to use. In the beginning it worked fine but later the more it was used the more it got worse. We found out a few mistakes we made in the process after we reviewed our experience. The first one is that too few business personnel were involved in the process. Why? In the objective laws, if two data are correlative, then one has to be got rid of. However, it is not necessary to get rid of one indicator in statistics. Some business personnel do not think it is necessary to get rid of one either and it should be kept there. Sometimes it is useless to find the objective laws. They need to combine with the business personnel and get them involved in it. There are so many fields and how do you know which combination is more effective than one another? So I think that very few business people involved in the process is one of the problems.

Another problem is that, we intended to use a feature that has been found out in one case to match a similar feature in the data volume (database). In hindsight we made a methodological mistake. Why? Because we use a small probability to infer a big whole and it is wrong in statistic methods. Let's look at the issue in another way and assume that we start the work to find out smuggling and violations, but take as the final aim, and then what is the first objective? What has to be guaranteed is to divide the goods to be checked into several pieces and how many of these pieces are crossed over and every piece has to be scanned before making the summary. I would think the effect would be much better this way but it will take longer time than expected. Therefore, a quick return is not desirable. It would be better once it is in place.

The final mistake we made is that there must be constant follow-up actions from business people. It is too naïve to think that the things delivered to me is bound to work after the data is given out. Therefore we will take these factors into consideration in summing up our experience in our future work.

This is a learning process.

Yes.

It is also a knowledge accumulating process.

Exactly. I feel data mining or information mining is a new thing to China Customs.

Who will decide on the subjects for the cooperation?

I don't think a mechanism has been formed in this regard, only some practices in our work. For example, I am not sure if department chief Miao has made an introduction to

you or not about the cooperation between China Customs and Fudan University. What is the cooperation? It is about what method should be used to make sampling checking and how we shall do about Customs declaration according to the different features.

He has, but not in details.

This is the cooperation with Fudan University and similar case with the software company about data mining.

Do you need approval by the head of the Customs?

We have to get the approval because it involves the fund. Furthermore GACC has some other organizations such as institutes and associations. We can apply for the money from them. The rules are that who approves and who will provide the money.

The Customs pay for it in the end?

Not necessarily. It depends on the cooperation with whom. I understand the Hangzhou Customs used to cooperate with Zhejiang University on the system development of assessment on enterprises, which includes knowledge and data about assessment of many administrative departments, but not very effective. I do not think it is wrong with the methods used, but probably it has something to do with the standardization of the data, which will affect its effectiveness. I feel that China Customs have been trying many things and so have many Customs regions and Customs houses, but not doing it systematically, only case by case.

In what ways do you as civil servants learn in the knowledge creating organization? Generally speaking, how willing are they to learn and do they have the ability to learn?

Qualification learning is not included, right?

Right.

My personal experience is that I will make up what I feel deficient in the work, take myself for an example, most of the time I study by myself. After all China Customs are not an organization in which knowledge is out of date very fast, but the industry of software development is. This is only my personal opinion. To my best knowledge, there are few excellent technicians in the Customs because I often consult with them about some technical issues so I know them quite well. So I think basically it is up to the person himself to learn. Personal interest and the professional dedication to work can motivate a person to follow the most advanced technology and methods. For example, Shi Yunfeng, who is working on the project HBR04, has very strong technical background, very lively mind and extensive knowledge. He is not rigid as most of the technicians are and think about an issue at length and in depth, especially the project he is working on will be used

in the Customs nationwide. What I can learn from him, first, is his hard working and dedication to work, second, he combines his specialty with technology very well and the design and plan he made are feasible. I think it is very difficult to achieve this in China. In other words, it is not easy to make a balance between business practice and technology because Chinese people have a very poor awareness for cooperation. He must have made a great effort for his success. Last but not the least, he has strong ability to construct and organize. It is so lucky to have him in the Customs.

Probably he is very familiar with the business practices.

Yes, he is. He used to work on microcomputer H883 and worked in the affiliated Customs. What is good to work there is that division of work is not very clear, so it is easy to bring up the person like him.

Do you think it is good or not to fix post and operate in according to manual in the Customs?

I think it is good. How shall I put it? To be honest, I participated in the making of the manual. Have our Director made an introduction of it?

Not yet, I am seeing him this afternoon.

We have 7th edition now and I think it is revolutionary comparing 7th with 6th edition. The manual worked out by The Customs region and Customs standard norm complement each other. We are now doing job training, the purpose is to enhance the quality of the business people. The manual has several advantages and one of them is that it is easy for people to communicate with one another and to avoid making mistakes and enhance the quality of the work. It is also very important to train personnel too.

People in each department do not know what other people do in other department if the work is divided into too much detail.

But it is better with the manual at hand. The manual focuses a bit more on process and the book on substantiality. It would be better if the two are combined. The manual tells that the first step, the second step and third step one should do what and what while the book tells what one should do when doing in the first step (how one should do).

What is that?

This is ***Customs Business Operation Standards*** edited by the Department of Policy and Legal Affairs.

Is it newly published?

Yes, it is new, 2007 edition. The manual are something to do with process and this one to do with substantiality. That is the reason why I said that the manual is very useful. First, we are not talking in a big sense but from the view of people, it breaks shield of people. Second, it is easy to operate by the manual and efficiency has been greatly enhanced. It was difficult in the past because in China policies and rules and regulations always cite each other, articles within articles, documents citing documents, which make so hard for people to implement them. It takes ages and great efforts to trace the relevant documents before the matter can be sorted out.

Of course it is easy to operate, but they have to consult with the rules and regulations in the documents when they are not sure about it.

Yeah, they have to check with them.

I saw in your website that the relevant documents can be read just by clicking the mouse.

Yes, it is. It is very necessary to have it that way.

It is very convenient and user friendly.

It is well done because it reduces much duplication.

How willing are they to learn and do they have the ability to learn?

To be honest I dare not say they are forced or out of their own initiatives, but at least it enforce their awareness through these forms. Let me take a simple example, I have read 6th edition of the manual for sir or seven times. Why? Because I have to prepare the exam papers, I have to read them carefully or I will make mistakes in the papers. So I think it is a learning process for me and I can learn so many things in the process. Even I have forgotten many things I had learned in the past but I can pick them up by reading so many times. I think it is very necessary to do so. The results of exams for most of people are good in general terms, but few did not do well as expected.

Where is the relevant knowledge of business stored in your organization? Are they stored in database and information management systems?

Data is stored in the database, but information, I think, is stored here and there in the organization and quality is different in degree. Business operations maybe have something to do with departmentalism

Is there anyone doing the dispersing work?

It should be this way. How is it dispersed? I personally think it is dispersed in various

systems and controlled by the different business department and the quality of the information is different, and the information is narrowly targeted. I feel people have paid great attention to data analysis and books through years of work. Take The Customs region for example, I feel, maybe with a bit of exaggerating, the business personnel in The Customs region have a strong ability to use computer and to analyze data among the Customs in China because I have been through some nationwide trainings in the Customs. I would not say they are the first, but at least among the top ones. I think it is very important to train the younger people to have this sort of data concepts in the development of various systems in The Customs region. For example, in 1996 we were trying to find some laws from huge volume of data when doing analysis of Customs clearance efficiency through considerable historical data here in The Customs region while other Customs were still doing the analysis of following one declaration form, case by case. Our ways of doing analysis is much more advanced and more powerful than others. This example shows that The Customs region has moves ahead of other Customs in data analysis in China.

I feel people do not have an ambition about information; this is not to say that we do not have information management. We do have them but we do not have the integration at high level.

In this case, much knowledge and information are stored in the experience and memory of the employees?

Yes, it is.

Knowledge and information can be also embedded in organizational structure and systems. Is there any information infrastructure or database available for data and information sharing? What are the functions?

We have database, but data is dispersed. How shall I say about functions? I think it focus more on submission of reports and approval and it is poor on analysis of information.

But how do you share information?

By sending emails. Anyway I feel that analysis of information not only in Customs but also in other administrative departments in China is poor. However it can be improved, I think, by doing two things, one is by policy analysis and the other by case analysis. These two should be given the priority while others should be strengthened and accumulated. Why? Because policy analysis and case analysis are hard, as said earlier that information is something very accurate and if this cannot be done well, then it goes all round the sun to meet the moon or the result will not be seen in the short term, but the result can be easily seen if efforts are made.

How database is maintained and who is responsible for it?

As I said earlier it is done by each department. Probably they would give authorization or something, but at the time of designing what was considered was all about submission of information and publishing, how to score and how to do appraisal and little is considered of what convenience information processing would provide.

How your experience and knowledge gained from the work and education and training stored? Are they systematically put into word files and stored in the database or in the mind and thus become a part of professional capability?

It all depends. For example, I am very much interested in data analysis and I have to get familiarized with business operations, data, and tools for analysis in the Customs. I think it is very important to know these things. As far as the tools are concerned, they are for general use and everyone would use how to use them and so are the business operations. For data, what I have been doing is to record all the data and the rows and fields in the data that I can gather in an Excel table, and then I will increasingly expand it. At present moment there are about 6 or 7 thousands rows and fields in the Excel. What is the focus of maintenance? The focus is how the data is generated and what the meanings are, and how to use them. This is my summing up and of course they are confidential. Others may ask me about them and I will check them when I do not remember them and then will make the explanations.

Are they for your own use or shared with your colleagues?

First of all, no one is doing the work of this nature and it is only out of my interest, which is liked by everyone. It is very necessary for the Customs works. However, no one has realized the importance and necessity so I have to do the data dictionary on my own. But why am I doing it? For example, I add my perceptions and understanding to the data dictionary because the difference between 2000 and 883 (system). What is the biggest difference between the two systems? When doing 883, I would ask the technician about it when I did not understand, he would help me to check the programs and tell me the business logics and through what logics to record it and how to do the analysis. But now with 2000, the programs will be controlled and I cannot see them. Therefore, I will have to ask the people concerned by sending them emails or telephones and then I will record them. Hence, it is not systematic to do things this way and it cannot be called a sound system.

It will be one when you have been accumulating them to certain extent...?

I think so. I also it is an accumulating process. But I don't think it will become a useful thing even in ten years' time. It would be much better if there would have been three to five business people and technicians each to concentrate on the work. I think the quality will be better than this one if they work only for two months. Unfortunately, on one realizes this, so what can I do?

Is the issue of confidentiality involved in the work?

It is all the same to me. It is hard to say now who will use them when it is done. It will be no more than 5 or 6 core people that should know about this. Furthermore, from the view of Customs there will be no basis for the reform (change) if they are not fully understood. I think our thinking was right at that time, but now maybe we are wrong sometimes because there are some problems do emerge in the process. For example, I found some data are very important, but there is no modification log. This is very troublesome so we report the matter to GACC. However, it is something significant for the Customs to do if we can organize a few people to propose a sound plan.

From the point of knowledge sharing, through what channel is your knowledge exchanged and experience shared, through formal communication methods or informal ones?

How shall I put it? My experience is that we use both ways. The formal ones, for example, we have a lot of meetings. The informal ones, we also have a lot of private communications. I think we can have deeper conversations in private.

What are the knowledge diffusion mechanisms (i.e. information, training course, knowledge community, and library database, etc.) available in your organization? How do they work and how effectively?

As just said, there are some channels. Take a simple example, there is an online forum in The Customs region, people are communicating many business issues. However, most of the topics are related to social issues, issues about life and treatment, etc.

Not purely business issues.

Right. It is not that there is no channel, but not well utilized. Anyway I don't think it has something to do with Customs, but with the wider environment. Let me give you a simple example, I looked at the personnel and education forum on the website of GACC when I was still with the department of RM, so many people raised questions about RM and I was eager to explain what is the matter all about to them. Eventually I found out that no way I can explain. Why? No one will really take it into heart (take it seriously) even if you talk a lot if it is not a face-to-face discussion. Take me for an example; I think it is something to do management philosophy. In 2002 when I was participating in the development of RM in GACC, Zhu Hong was the leader, now the department chief of RM in GACC, being a professional by training, he used to study business management and administration, loves to learn, very good English and widely read. We had an argument over an issue and we argued for three nights till 3o'clock. What had we argued? Because I had been working on the site and transferred to the department not very long. I had done some analysis and I felt we should contribute what we had learned and

conclusion of analysis to those who worked on the site for them to refer. This is how I felt at the time. When I started to do the work about RM, we should also provide an environment for them to share information and data. He did not agree. We had been discussed the issue and argued and argued vehemently and finally I was convinced by him. He said why you gave them the information, for what? I said they can use them for what ever the purpose they want for as long as it was good for the management. He said I was wrong and asked me to think harder. I did understand what he meant. It is better for me just to give them an order for them to follow than to give them information. All I need to do is just to give them an order and a feedback from them, it is that simple. They don't have to think about anything else. We are doing the products, not the art. It does not require them to give so many designs. What they have to do is just to follow the order. Whether they can do it well or not or my arrangements are reasonable or not, just leave it for assessment to do the job afterward. There are so many things for Customs to do that they cannot do everything. It only takes one or two minutes to check and verify a document and it is not realistic for them to take another eight minutes to read these things. What does this show? It shows that information processing does not meet the requirement. If the requirement is met then what are given are only orders. It is very difficult to explain to and reason with so many people in China Customs. It takes half a year or maybe longer to have people mind changed by online communications. Therefore it indicates that the channels are so smooth anyway.

Face-to-face still remains the best way for communication. Especially tacit knowledge has to be communicated through face-to-face.

It is very hard to solve the problem. Let me give you an example, there is another able man in the Customs, called Ren Guoquan who works in Tianjin Customs. The first person comes to my mind is him when you mentioned tacit knowledge. He is a master at checking and does the job much better than others and is very experienced. But personally I don't think it is a good idea to mystify it. Why? It is probably because we have not done enough analysis to make it better known to others. Has anyone ever done any analysis of the cases done by him. You will feel he is a legend if one has never done so. However, at least 50 percent or 60 even 70 percent of the features can be extracted from the cases and recorded for use by majority of people if the cases have been carefully analyzed. For example, maybe it is difficult to tell the expression in one's eyes, but many things he has found out, for example, something that has to do with laws and experience, can be summarized.

Is there anyone who is responsible for the work?

He is in Tianjin Customs and personally I don't think so.

Anyone here then?

Let me think, there should be someone, who will that be? There is one who called Tian

Xugang, who is very good at study of Intellectual Property Rights infringement and very experienced in the area. Checking is a job that covers a wide range, but he is very strong at the area. He has a very high rate of finding out the violations. But for him I feel that a quality that should be possessed by a person like him is to review his experience and record them. For the managers at the middle level should incessantly to communicate with him and assist him in structuring and recording his experience and knowledge.

From the point of knowledge management, their knowledge and experience are precious. I think it will be useful if they could be recorded down into text to be used for a text book for anyone to learn.

Can you find the knowledge you need in the database in the short time when making decision?

Personally I think so. Why? For example, when I do the maintenance of data dictionary, I would get to know a lot of things that I don't understand, and then I would get in touch with the person(s) in GACC. Of course it is through my person contact, but without personal interest getting involved in it. Our personal relationship will be improved by asking more questions and become better and better with increasing requests from me. For example, I asked a person who works in GACC a question about Customs systems 2000, in which it provides a very friendly function of logic judgment. This can be done by writing simple sentences according to its syntactic rules of course and then it will make judgments by the writing. Who will use it after writing by the technicians? It is used for testing and trial by the technicians. He thinks it could be very useful for our control job, so he did not delete them and we use them since. I asked him to make some modifications after I used it for a while. The technician felt surprised that there was someone using it so the communication between us has become very harmonizing indeed. I feel it is kind of recognition, a recognition of understanding.

As you just said that you asked the person questions, from the point of knowledge management it is called Community of practice (CoP). CoP refers to some people have a common interests towards a topic and have a common background. What does this mean? It means that people with common background and interests tend to be much easier to share knowledge among themselves, especially it is important to share tacit knowledge. Therefore, a lot of knowledge innovation and creation are realized in this way.

I thought of a problem when you were talking about tacit knowledge. There is much of tacit knowledge in the administrative organizations in China. It is quite obvious to think that tacit knowledge is created by people and there are so many things can be shared by all. However, tacit knowledge cannot be fully shared due to the relationships between and /or among people, departments and superior and subordinate.

Do you mean that someone hoard their knowledge and would not like to share with

others?

This phenomenon still does exist. For example, the reasons why I have been maintaining the data dictionary and the ability to do analysis in the functional departments in The Customs region and each department enjoy a good relationship with us are because it has a lot to do with the good relationship and we constantly communicate with each other so we can improve together. I gave them my data dictionary in private. However, I do not see any improvement made so....

I think it depends on the person and you think it is useful but others do not.

He even maybe does not know what it is used for.

From another angle, are the outcomes of the studies and suggestions helpful decision making and quality enhancement since so many case studies have been carried out every year in the organization?

I think it should be helpful. I am not sure if I understand you correctly. Let me give you an example, if proper, we have written many analysis reports, which are based on data analysis and knowledge analysis. I think they play a very important role in the internal management of the Customs.

Let's move to the last dimension of the questions—enabler of knowledge management. Basically there are two of them, one is organizational culture and other is trust. So how do you think of the organizational culture in your organization, either The Customs region or China Customs as a whole?

How shall I put it? My personal feeling is that, to be honest, organizational culture in The Customs region is among the best in China Customs in the following ways. First, as an administrative department, it is very important to have a clean and honest government. The situation of clean and honest government in The Customs region is very good from point of China Customs. Second, I also feel that the cultural level of The Customs region officers is pretty high, in other words, they will listen and do what the leaders say whether they understand it or not. I think it is also part of the culture. It has shaped into an accepted practice and abides by all the people here. They will all follow what they are told to do even they have a totally different opinion. I think they did pretty well in this respect. Based on which I would say they did very well in promoting new things in The Customs region.

Do you think as a leader you can play the role of 'role model'?

It should be like this because...

Because the leader play a very important role in the culture of an organization.

Based on my 19 years of experience in The Customs region, I don't know if there is a phenomenon in academia that a philosophy, when great change has taken place, will have a great impact on people and keep a deep impression on people's mind.

Why did I ask this question? Because the management work in The Customs region was not well done in the past. But great change had taken place since Li Qingzhu became our director of The Customs region. Some of his way of speaking and doing things really had changed many peoples' mode of thinking and concept. Let me give you a simple example, I was very young when I joined the Customs and there was not much to do at the time, not like now we are busy like hell. I like all kind of activities so I went to play balls at 10 o'clock sharp in the morning and it was physical exercise during breaks anyway, but I could not control the time. We became honest after Director came to office and the rule was set up through a few things. Another thing I mentioned just now is to follow the order by the leaders whether we understand or not. If a decision has been made regarding the management matter, then people would become aware of cooperation because the work has been divided into such a detail and it is very important to cooperate with each other, or we all would be dead. It is less important if the work is not divided into great detail.

Director Li has made so many changes here, especially in taking a good care of and fostering younger people and also setting strict demand on them. This probably has a great impact on people and remains for quite a long time even the director have been changed several times.

How long has Director been in office?

It is about 7 or 8 years from 91 to 97 or 98. It is quite a long time for a position a director in China Customs as there is a requirement for them to move to another Customs every four years. Because he had stayed at the position for long enough so the change he made on us was really great and made The Customs region back to the right track. He had done a great deal either ideologically or financially and left many things behind when he moved to another Customs region.

Were there any complaints about the ways he did things in the Customs? Although the atmosphere and social conduct were good, yet ...?

It all depends how you see it. Let me give you an example. Great efforts were made to build clean and honest government when he was the director and it was rare for anyone to so in China at that time, to say nothing of China Customs but Director Li had done so ahead of others a few years before when everyone was pursuing the policy of opening to the outside world and invigorating the domestic economy.

Now back to your question, were there any complaints about it? Probably there were but personally I had little complaints because I was brought up in a family in which my

parents request a strict demand on me. I don't see how interesting eating out with clients really is. I had a reflection after one incident in the Customs, which makes me really think hard why the rules and regulations are made for. I think they are made to protect our interest, the majority of people in the Customs. The incident I just mentioned is called 'incident of rubbish from foreign countries', you may have heard it on the radios or TV, or read the report from the newspapers.

The whole story is that a cargo of inferior quality of waste paper was imported from USA and delivered to Pinggu where they were sorted. The matter was reported by a CCTV program 'Focus Interview' and then by newspapers all over in China. I was one of the parties to the Incident because I was one of them who inspected the cargo at the port.

It was you who found it out?

It was me who did the inspection and found no reason for not to release the cargo because I think the journalist way of calling it 'Incident of rubbish from foreign countries' is a not professional way to deal with the matter. From the Customs point of view, there was no proper item for the classification because they were declared as waste paper and there were no any rules and regulations prohibiting certain percentage of magazines in the waste paper from entry into China. I did nothing wrong by releasing the cargo and I would have been wrong if had not let it go. I had no legal basis not to let the cargo go so it was wrong not to do so. I did inspect the cargo twice or three times for the sake of shippers. The shippers did ask us for meals and give gifts and we all refused to accept because we have rules and regulations. Later we learned that who and who had been arrested or put into custody and who and who had been dismissed from the office. What does this mean?

When the group of investigation came, they had all the warrants documents ready with stamps on them. Anyone who had violated the rules and regulations and found guilty would be arrested right away by just filling the name on the warrant. I had not any wrong doing at the time. However, I would be dead if had had eaten meals with the shippers whether it had an influence on the enforcement of laws or not. Therefore, I think that rules and regulations are to protect everyone in the Customs. However, I cannot guarantee everyone would think the way I think.

Building a clean and honest government is one aspect of the matter. But from point of trust, has mutual trust been established as a basis for experience sharing and exchange or 'knowledge is a personal asset' is widely perceived in the organization?

My personal feeling is that I would not take initiative to share my experience from individual point of view. But I will not hold anything if anyone would come to me. This is how I feel about the matter. Someone may even does not know what to say if I offer to share what I know because they may not know what use this is to their work for due to division of the work. Therefore, normally I would not initiate the sharing because, as I

just said earlier, technicians pay more attention to programs and business people attach great importance to business demand and data and little communication are between the two.

As far as team spirit is concerned, as you just mentioned, I think it varies in China Customs. It has a lot to do with the leaders in the departments depending on the leaders whether they are open or closed. I think this might be the issue that causes the unbalance between the departments. As far as Customs is concerned, there is little we know that can be put in the big environment of society, very rare. Therefore, I think there is little that we cannot share with other. Anything that has been asked will be answered and there is nothing that cannot be said about work.

Is it possible that you share your experience with others and they use your experience for their own benefit and for promotion? I think there is competition between colleagues?

It seems that, at least I do not have the kind of experience. Conversely I feel I also can learn from others when communicating with them, it work both ways.

Generally speaking, you would like to tell what you know if I told you what I knew.

Yes, you are right.

So the trust between colleagues is easy to be built up this way. I will not tell you what I know if you do not tell me what you know and there will be no learning taken place.

Do you have an incentive system to encourage life-time learning and knowledge sharing?

How shall I put it? As far as academic credentials education is concerned, GACC has issued several documents regarding joint running with universities so we can send people to study in the universities but they have pass to get academic degree and they do not have academic credentials. Why would say it is an incentive? Because the Customs pay majority of tuition fees, 30 thousands RMB for three years and they pay only 10 thousands and the rest is paid by the Customs.

Provided that they can graduate from the universities?

Yes. I think this is one way to encourage to study. But little incentive is provided for non-academic credentials. Why? Because it is very difficult to set a standard for it, why you are encouraged to study this and she is encouraged to study that? In administrative departments or units this is so-called equity or fairness and it is not easy to break. Maybe it is fair for academic credentials and degree education because we all can go so the policy is easily implemented. But many things are different, for example, the technical

departments are different from us in that they have funds available to purchase books etc. but we have to think about it before we buy any book. Of course it is understandable but what I am saying is that there is no sound system established in this regard.

Have your leaders in your organization given sufficient encouragement and support in establishment of internal talent database and resource allocation?

Finance? It is easy to talk about this. Why? Because I think China Customs, whether it is as an administrative department or not, scientific management is just good to reduce cost and enhance efficiency but I think it is has more to do with the big environment, which means that a bigger system has not been established for administrative departments to follow them consciously. Under the current system the departmentalism prevails and it is very difficult to allocate resources effectively and reasonably. Let me put in this way, I mentioned performance appraisal, it is easy to allocate resources if all the Customs houses or offices are appraised by the same set of standard of indicators. Why? Because the standard is set by the Customs region and it is easy to put more hands to those place that are needed most, but it is difficult to do so if it is appraised by each department themselves. If all things are important and there will be no importance. The reason why it is not easy to adjust it is because the big environment causes the small environment so. The adjustment of resources is more easy downward than upward, the more difficult the upward.

From what we have talked above, could you make any suggestion about knowledge management process, application of IT, organizational culture, and talent development and training etc.?

My personal feeling is, maybe it is wrong, that there should be a more open environment. What does this mean? From pure business point of view, I think it is quite important we speak our minds. Why? As a leader of an administrative department, exercising power is only natural and necessary but before the leader makes any decision, or the meaning of speaking our minds that I am talking about is a part of auxiliary decision and there should be a better auxiliary decision to realize it and it should be separated from administration. Why? Because experts and leaders speak the different languages so I think we should do better in this respect to separate auxiliary decision and leader's decision. I think this is a problem and there should be more options, not only one, for leaders to choose. This is one aspect.

The other aspect is that, the reason why I mentioned about matters that we have to take into account and why some people are doing better and others are not in more or less the same environment? I feel that in ideology we need more variety and flexibility although ideological work has been made very popular in China. It is because many things still depend on individual and I feel that there is few people of this kind and more things should be given to them, such as professional awareness. When people have a professional awareness, they would like care so much about other things. Assuming that

we double the figure from 3 or 5 to 7 or 8 by our efforts, then our force would be strengthened by one fold. I think we should be doing better in fostering people in ideology because succession in China has not been very consistent although China is a country that is of a long history and culture due to its constant revolutions. Once there is a revolution, things happened before would be negated and it was negated series by series, which bring a big problem for the Chinese people whether in belief or other areas. People feel confused and bewildered and lost the sense of direction. They will follow any new trend that emerges and anything that is never seen before. This problem also exists in our case. Chinese people have very poor consistent ability due to poor succession. Therefore, there is a need to indoctrinate them with ideas, not only with ideas but ideas combined with practice. This is what I mean by indoctrination with ideas. Let me give you some examples, I prefer to think freely when I am not so busy, or say I have been doing data analysis and something about information. The business demand made me want to do it one or two years ago but I did not have the opportunity to do it. When I finished the work, I found that similar products had already been out and were very systematic, which belongs to other people.

What is my feeling then? What made me take such a long time and while there was not something a bit advanced to combine my work in the Customs and teach me? It will save a lot of time. I have been thinking a lot of things and think ahead people around me, but actually they had been thought about already by some people if you look at them from the point of society. Therefore, new ideas and concepts such as knowledge economy we have heard them before, but there lack of indoctrination as to how to make them closer to us and how to put them into practice. For example, we had to do a multi-dimensional database, a type of data warehouses, when doing data analysis. The data is divided into two types, one is qualitative and it is viewed from dimension, and the other is quantitative and it is viewed from the value of the dimension.

One is qualitative and the other is quantitative.

Anything qualitative can be combined freely and anything quantitative can be calculated fast to have a result according to the combinations but it will take a lot of disk space. It is a kind of using time to trade space. I gradually sum up what I had been thinking in the past after I learned it. But I found it had already existed after I had read many books. Therefore, we think many things in practice are discovery, but actually they have been thought about by others. Under the circumstance, I think it is possible that something that is not well combined can cause a delay and waste in time.

Including waste of time, resources and energy.

Huge waste (Comments: therefore it needs KM to solve the problem).

Do you have any ideas about talent development?

From the viewpoint of talent development, I did really thought about after I was promoted to the position of vice chief of the department, but my ideas have not been formed into a good shape and need to be verified in practice. However, I still think that we need to train and develop people in a variety of ways because I feel that there is a tendency that in administrative departments leaders' preferences determine the direction, which easily leads to a situation that only single component is favored, which is not conducive to the development of people because time is changing constantly. It is possible that a few concepts and fields will prevail but it should be developed in a balanced and a variety of way and it is better in a variety way than in a balanced way. I don't think it is good to consider problems for quick success and instant benefits. We should let people do the reflection as far as they perform their duties well enough in order to create a better research environment.

One of the features of the Customs differs from other government organs in that it is a quasi-military organ so the hierarchical concept is very deep in people's mind.

Yes, it is. Not only in the Customs, but also in local government, in which there is a position call 'gu' which is under the section. The head of 'gu' is very powerful, so what shall I say?

Do you have any suggestion about organizational culture?

According to my observations and investigations, it is easy to do things if all the administrative organizations follow what The Customs region has been doing.

I dare not say organization, but as far as culture is concerned, I think we should characterize culture. It should be essence of a thing whether it is a good thing or bad thing if we are talking about culture. Take opera for an example, the reason why it is called Peking Opera is because many people participate in it and many changes have taken place and then many masters emerge out of it, so we call it a culture. Something common or routine cannot be called culture.

Another feature of culture is its succession. I think it is very important that it be passed down the generations. But as I just said earlier that it is difficult to pass down. This is how I feel about it in the Customs. But I think I am quite lucky to have a master whose name is Zhao Hongkun. He is unique in The Customs region as he has two PhD degrees. He is older than me and he is very diligent in his studies and smart too as he speaks several foreign languages. I was very young and made an apprentice to him when I joined the Customs. When he translated Italian and Spanish into Chinese, he asked me to type for him as he was slow in typing. I felt he was very smart and has a high level of education as he knew so many foreign languages. He used to study the history of Customs and told us about what was like about the old Customs. Even now when I think of it I still stand with the time. Although there are constant reforms going on in the Customs, the reforms sometimes are not always good and right because there is saying in China that 'there is no reform that is not successful'. Actually I don't think many reforms are right when thinking them carefully. Why so? I think it is really because of lack of succession in the

culture of Customs. The study of history of Customs has nothing to do with the management of the Customs. They are cut off by people whether consciously or not. Let me give you an example, in the old Customs internal and external works were separated and internal works dictated external works. The internal told the external what to do and the external had to do what they were told. But now it seems that we are all equal and no one tells anyone to do anything. Gradually it will disappear completely in the Customs. As a matter of fact it is to guarantee the maximization of social efficiency and it is not related to the positions people hold in the Customs. It was the best way for doing things but now people do not accept the old way of doing things so I think that succession of culture was broken down.

So there is no difference between the internal and external now?

We still have the internal and external, but no guarantee that the command is exercised between the two.

Can we say the functional departments are the commanding departments?

Yes, you can put it that way, but? Let me give you a simple example, you have to go and check is I tell you so but you should go if I do not tell you so. So it is possible that you will go when I tell you not to. I tell you so and you did it with compliance but you did it anyway when I tell you not to do it.

But he dare not do it when you tell him so?

Yes, he has to do it. What I consider is from the point of saving resources. It needs resources to do the checking so I don't think it is necessary to check when I say no. However, when you think it is necessary to check, a proper procedure is required with reasons for doing so. It is the management and some rules and regulations have to be followed to form a feedback. The external cannot do what they want it to do or it will be a mess because they take most of resources in the Customs. We use little resources in the office and at most we may use the computers a few more minutes. But things are different with the external. They do not have the resources and energy to check what they should check if they checked what they should check.

Especially they should not do so when there is short of hands in the Customs.

Therefore, I feel that many things have not been passed down and it is very absurd to have so-called equality.

It maybe has something to do the bigger social environment.

Yes, it has. Equality of man and woman is promoted in the society. I am not saying it is not right but it does not necessarily mean that man and woman do the same kind of

works.

Thank you very much for your time and patience.